



Summerland Well Research Project

Phase I Report

June 20, 2000



Summerland Well Research

Phase I Project Report

Fairweather Pacific LLC
4567 Telephone Road
Suite 203
Ventura, CA 93003
Tel: (805) 658-5600 Fax: (805) 658-5605



Summerland Well Research

Phase I Project Report

Table of Contents

Section 1

Phase I Project Report Text

Section 2

Division of Oil & Gas Research Results

Notes from Division of Oil & Gas Research

California State Lands Research Results

Notes from California State Lands Research

Section 3

References



Summerland Well Research

Phase I Project Report

Introduction & Problem Description

Fairweather Pacific LLC has been retained by the Summerland Foundation (Reference 1) to investigate possible sources of oil seeps visible on the water surface offshore Summerland, California generally in the area between what was known as Treadwell Wharf and Moore Wharf.

Phase I Statement of Work

The work scheduled for Phase I included:

Locate and review archived data from California Division of Oil & Gas, California State Lands Commission and U.S. Coast Guard regarding well histories, information data, etc. relative to the Summerland Field operations from 1900 to 1940. Particular attention will be directed to well plugging data and actual well locations within the California State Plane, Lambert Zone 5, System. Geological information will include cross-sections running North and South from the SPRR to the end of the abandoned Treadwell Wharf.

Research up to 35 wells, including wells located on the Moore Wharf, the Treadwell Wharf, selected Sunset Oil Co. Wharf wells and selected onshore wells located North of the Treadwell and Moore Wharfs.

This document provides the results of this study.

Documents Received from Client

The client provided the following documents to Fairweather Pacific LLC:

- "Exhibit Map" by Mark E. Reinhardt (undated); an aerial photograph showing locations of the present seep observations plotted with the historical locations of the Treadwell wells and Moore Wharf (Reference 2).
- Xerox copies of recent aerial photographs (undated) showing the residential bluff area and a limited portion of the offshore area beyond the beach.

Research of Records at the Division of Oil & Gas

Representative(s) of Fairweather Pacific LLC visited the offices of the State of California Division of Oil & Gas (DOG) on May 1 and 2, 2000 and again on June 8, 2000 to review and reproduce historical information pertaining to the Summerland Field oil wells.

Regrettably, no well records remain of the original drilling operations of 1894 through the very early 1900's. What well records are available for review pertains to wells drilled after



Summerland Well Research

Phase I Project Report

the 1920's and are primarily those located on the bluff and are consequently generally outside of the area of this study.

One very interesting and useful piece of information obtained at DOG was a copy of Plate VII from USGS Bulletin 321 (Reference 4) depicting a geologic cross-section along Treadwell Wharf prepared from the early well logs. Two other charts from the same USGS document, Plates VI and VIII provide additional geologic information useful to the study.

One collection of recent work pertained to the location and cementing of twenty-one (21) old California Oil Co. wells in June-July 1985. These wells were located on the bluff between the Treadwell Wharf and Sunset Oil Co. Wharf.

Well Operations Reports for the three (3) California State Lands Commission abandonments, Well #10, Well #11 and Well #13, which were cleaned out and cemented in 1993 were reviewed. Two of these wells are located on the beach adjacent to the shoreward end of the Sunset Oil Co. Wharf and the third is located on the beach a short distance to the west of the Lillis Wharf.

Several other Well Reports were reviewed, such as, Seaside State #1, Seaside Fee #1, Summerland #1 and Submarine Oil Co. #17-6, however, once their locations were confirmed as being generally outside the area of this study, no further action was taken. Prior to locating the USGS Plate VII, these well records may have provided useful information in reconstructing the geologic stratum data in the Treadwell area.

While conducting the research at the DOG offices, Fairweather Pacific was verbally advised by a DOG representative that many old files had been discarded a number of years ago, which may explain the absence of well records from the turn of the century.

Research of Records at the State Lands Commission

Representative(s) of Fairweather Pacific LLC visited the offices of the State of California State Lands Commission (CSLC) on May 16, 2000 to review and reproduce historical information pertaining to the Summerland Field oil wells. Similar to the disappointment experienced at DOG, no well records pertaining to the original drilling operations of 1894 through the very early 1900's were located.

The material available at CSLC consisted of file folders containing correspondence, reports, charts and photographs for CSLC Work Orders 3399 and 9579 which pertain to periodic cleanup, debris removal, abandonment and surveying operations from approximately 1949 through 1995.



Summerland Well Research

Phase I Project Report

Research of Documents Obtained from Other Sources

While researching the CSLC files, it was learned that in 1994-1995 the U.S. Coast Guard funded a program from the Oil Spill Liability Trust Fund to perform a Geophysical, Hydrographic and Magnetometer Survey of the Summerland area. Since the survey was performed using federal funds, the reports would be available through the Freedom of Information Act (FOIA). Electing instead to avoid a lengthy FOIA inquiry and search exercise, the U.S. Coast Guard was not requested to provide any documents for this study. It was learned in discussion with U.S. Coast Guard representatives that distribution of the information contained in these reports is not particularly restricted. Fairweather Pacific LLC located copies of the US Coast Guard commissioned report in the private sector.

This report consists of three volumes containing copies of historical correspondence, newspaper clippings, documents relating to permitting and the survey, magnetometer reports and diver report for each magnetometer target identified.

Brief History of Summerland Oil Production Activities

The Summerland Field attracted approximately 22 operators drilling up to 220 wells in the beach and submerged lands during the late 1890's. The near proximity of oil-bearing sands to the surface, as evidenced by significant natural seep phenomenon, and the ease of producing the oil from these shallow deposits was a main attraction for this area. Many wells were less than 400 feet deep. The drilling techniques of the time were crude at best. It has been reported that it was not uncommon for an operator to simply pull out of a hole if it was damaged and move over a couple of feet and drill again. An elaborate network of wooden wharves connected many of the wells and operators together. There was little, if any, regulatory oversight during this time. In 1904 the field became unproductive and the operators walked off, leaving exposed wellheads and the wharves. Abandonment techniques, if used, were far below today's standards. Any combination of rags, dirt and telephone poles were placed into the casings, or, they were just left to silt over. Over time storm activity destroyed the wharves and the wellheads were allowed to corrode. In the 1930's, and later, there was some flurry of renewed interest in the Summerland Field and several deep exploratory wells were drilled and cemented in various locations on the bluff. However, by 1907 there were no further beach or offshore wells drilled (References 5 & 6).

Findings (Summerland Area in General)

The nature of this reservoir is such that it is "charged" from a water source (aquifer) located in the hillside some distance above and beyond the beach areas. This is evident from inspection of the geologic cross-section (Reference 4A) where the oil sand and shale layers rise upwards towards the back edge of the terrace. Possibly contributing to the existence of the natural seeps is the presence of the Summerland Fault at the western



Summerland Well Research

Phase I Project Report

edge of the Summerland Field and projecting generally eastward towards the previous location of the Moore Wharf (Reference 4B).

During the time of large-scale oil production, around 1900, the reservoir pressure was being reduced as a result of extracting the oil and production levels dropped. Production numbers were never large by today's standards; following the occasional initial "gusher," 2-5 barrels per day were common with a very limited number of wells reaching 10-15 barrels per day for short periods. As oil production dwindled, more water was observed mixed with the oil. Since that time, the remaining oil has migrated to the top of the formation (anticline) and the aquifer continues to charge the reservoir and push small amounts of oil (seeps) through the permeable layers (Reference 7).

Although there is no question that historically seeps have been emanating from some well locations, review of various documents obtained from CSLC indicates that at this time natural seeps comprise the majority of the observations in the ocean off of Summerland with some periods reporting more or less seep activity than others (References 8, 9, 10, 11 & 12). The reduction in seep observations from old well sites is a direct result of the various cleanup and abandonment operations conducted as described below.

Several times between the period of 1956 and 1993 CSLC funded cleanup, debris removal and abandonment operations in an effort to reduce the amount of seeps that were emanating from old well casings in the tidal and submerged zones of Summerland. Most of this was effective and generally removing the old debris and repairing poorly abandoned wells left by the operators decades previously was beneficial. The following table summarizes these cleanup and abandonment operations:

Year	Description of Operation	Expenditure
1956-1957	Removal of obstructions from approximately ½ mile of beach.	\$25,000
1960	Survey to prepare a map (Lindbergh Map) of all well casings and pilings that could be located. Ninety targets identified.	\$1,900
1967	Located, cleaned out and re-cemented 2 wells on beach. Removed casing from 1 offshore well. Beach Clearance Project No. 1	unknown
1967	Located, cleaned out and cemented "A" well. Beach Clearance Project No. 2.	\$1,452
1968	Locate, cleanout and place a 5' cement plug in and remove casings from 60 wells plus retrieving a substantial amount of bottom debris. No correlation exists as to which wells were addressed. Beach Clearance Project No. 3.	\$53,400



Summerland Well Research

Phase I Project Report

Year	Description of Operation	Expenditure
1975	Remove three wellheads and other beach obstructions. Cemented Treadwell #10 in 6' diameter pipe (Griswold work).	\$43,780
1976	Abandonment of wells Williams #1, 2A, 3A and Becker Fee #2 and one other unidentified well.	unknown
1981	Cemented Treadwell #17, inspected Freckman Seep #1 and inspected Treadwell #10	\$1,800
1993	Abandoned 3 wells in Work Area #2, Identified as State Lands Commission wells #'s 10, 11 & 13 on Reference 3.	Approx. \$900,000
1994-1995	Perform hydrographic, sonar and magnetometer, diver survey and abandon 5 wells. When the work was stopped no further decision was made regarding the 5 wells.	\$850,000*

*It is not mentioned how much of the \$850,000 allocated was consumed in this exercise.

Table references: 13, 14, 15, 16, 17, 18 & 19.

Findings (Treadwell Wharf & Moore Wharf Areas)

Construction of Treadwell Wharf commenced in approximately April of 1898 and by August 1899 there were 18 wells operating on the wharf. Ultimately Treadwell Wharf would have 21 wells and would extend approximately 1200 feet seaward, the longest of the Summerland wharves. Fairweather Pacific has been unable to locate any well records pertaining to the Treadwell wells. Further, with the exception of the references to Treadwell #10 and #17 below, Fairweather Pacific has been unable to locate any records of the methods or procedures used, if any, in abandonment of the Treadwell wells.

In many instances, documents that Fairweather Pacific has reviewed referred to observations of oil seeps at Treadwell locations. Specifically, Treadwell #10 and Treadwell #17 have been identified in more than one piece of correspondence. Please note that some of these references are circular, meaning that one refers to, or relates to, another from the same time frame (References 19, 20, 21, 22).

As mentioned previously, Fairweather Pacific was unable to locate records of initial attempts at abandonment. Of the 80 targets identified by Lindbergh (References 5 and 23) on the beach and in the submerged zones of his survey, only 60 of these were addressed in the abandonment exercise of 1968 (see Table). Although as many as 25% of the targets were ignored, it is still likely that some, if not all, of the nearshore Treadwell wells were located and abandoned at that time. Regrettably, in 1968, no records were kept as to which specific well was being worked on at which time, just a sequence number on the handwritten workers' daily diary (Reference 24). Consequently, no one can say with



Summerland Well Research

Phase I Project Report

certainty, which, if any, of the Treadwell wells were located, cleaned out and cemented. Since it is reported in these diary sheets that the casings were shot off with explosives and retrieved, locating any remaining well casing with the idea of re-entering to clean out and re-cement would be extremely optimistic.

From all indications Treadwell #17 appears to have stopped seeping following the later abandonment work performed by Pete Burmis in 1981(Reference 17). Following this work there has been no further correspondence indicating seeps from this location. And it is particularly interesting to note that the Treadwell #17 area does not report natural seeps due to the fact that the geologic cross-section (Reference 4A) indicates that an oil sand layer intersects the natural seabed at this location.

Treadwell #10 was cemented (again) in 1975 by Griswold Construction using a short length of 6' diameter pipe jetted into the seabed and filled with cement to seal the well casing (Reference 17).

The Treadwell #10 area continues to be a source of oil seep observations. Correlation of the position of Treadwell #10 (References 3 and 4A) with the results of the 1995 survey priority sites (References 19 & 25) and the general location of the easternmost oil seeps observed by the client (Reference 2) points toward the area of Treadwell #10 as being the source of continued seep activity.

In reviewing the most recent reports (References 19 & 25) regarding Treadwell #10 seep activity we find conflicting accounts of whether there is seep activity coming from the casing or not. For example, Reference 19, on page 2 mentions, "...some gas leakage through the concrete plug..." and "very slight leakage around the outside six foot diameter steel sleeve..."Whereas, Reference 25, on page 2 of 2 for location target 27 mentions, "...oil seepage is observed leaking through the plug..." and "gas bubbles also visible coming up through a seam in the casing." But, Reference 25, Summary of Priority Sites for Permanent Target No. 5 states, "It should be noted that no oil seepage was actually observed coming from within the casing itself." Fairweather Pacific is not able, at this time, to resolve these apparently conflicting statements. What is in agreement in Reference 19 and 25 however is that seepage from the seabed is occurring. The source of this seepage, that is, whether it is purely natural, or, following a path along the old casing and then passing around the 6 foot pipe and through the seabed sediments is in question.

The seep reported in the results of the 1995 survey priority sites (Reference 25, Permanent Target No. 7) correlates very well with the general location of the westernmost oil seeps observed by the client. The report lists this as a natural seep; however, the proximity of this seep to one of the old Moore Wharf wells cannot be overlooked. It is possible that oil leaking from an old well casing has formed a conduit through the seabed sediments and is now seeping into the ocean.

In reviewing the two general locations of the clients observed seep activity (Reference 2) it is understood that more than a single point on the ocean surface was recorded at each of



Summerland Well Research

Phase I Project Report

the general locations. This may not indicate that there are multiple seep sources per se, but rather, as is common for seeps this area, a periodic release of oil will experience different current effects, or rise to the surface at a different rate depending on the volume of the release. Consequently, it may appear on the water surface that there are multiple seeps when in reality it is one seep "zone" at each general location.

Conclusion & Recommendations

From the findings reported above it must be considered likely that the recent seeps observed by the client are coming from the same source as reported following the 1994-1995 survey. However, to assess the present magnitude of the problem and to confirm that in the five (5) years since the last survey that the conclusions drawn herein are valid, Fairweather Pacific recommends to proceed with Phase II of this project and mobilize for a diver's survey of the seabed in the vicinity of the two reported seep locations as described below:

Please note that prior to commencement of Phase I, Fairweather Pacific's proposed scope of work for Phase II included a four-point plan containing some items that may have prematurely assumed that the seeps were emanating from old well casings. At this time, Fairweather Pacific proposes that a discussion of the results of the recommended diver's survey be conducted with representative(s) of the Summerland Foundation and then modify and/or expand the remaining task items in Phase II accordingly. This recommendation then basically divides Phase II into two parts, (A) diver's survey and discussion of results, determine what corrective actions can be taken and (B) develop a Corrective Action Plan.

The work scheduled for Phase II, Part A (Phase II-A) is proposed as follows:

Subsea Inspection – A subsea inspection will be performed with the goal of identifying the actual sources of seepage at the areas of Treadwell #10 and slightly west of the Moore Wharf. Phase II-A will be managed by Fairweather Pacific LLC with responsibility for arranging the diving services to be subcontracted to Marine Project Management, Inc.

- **Diving Contractor** - A professional commercial diving company will be engaged that will provide personnel familiar with well configuration(s). Equipment provided by the diving contractor will include standard commercial air diving equipment, a support vessel, underwater color video, and a hand-held underwater magnetometer. Magnetometer effectiveness is limited to approximately 2-3 feet below the seabed surface. All ferrous materials within that range will be detected. Diver "excavation" of seabed materials will be limited to that which can be moved by hand. No excavation or air/water jetting equipment is included at this time. Personnel will include 2 divers, 2 tenders and a video operator.



Summerland Well Research

Phase I Project Report

- Survey Contractor - A land surveying contractor will be engaged to position the inspection divers at the previously identified suspect areas, and to take coordinate fixes at the actual leak locations once identified. Survey equipment will include a professional land surveyor, an EDM instrument, and a buoyed prism array.

Upon completion of the inspection, Fairweather Pacific LLC will develop an inspection report, which will include video tape(s), video still frames, and associated logs with location coordinates.

Cost Estimate Phase II-A – The following itemization provides the estimated costs for Phase II-A diver's survey, reporting and management as follows. Phase II-B cost itemization will be subject of future discussion and submittal.

Mobilization/Demobilization

- | | |
|---------------------------|-------------|
| • Marine/Diving Equipment | \$16,675.00 |
| • Survey Control | \$810.00 |

Field Operations

- | | |
|--|-------------|
| • Diving Spread (personnel, diving equipment, vessel, consumables, etc. for two 8 hour onsite days operation at \$7,190.00 per day | \$14,380.00 |
| • Survey – Personnel and Equipment for two 9 hour onsite days at \$1065.00 per day | \$2,130.00 |
| • Inspection Report – Five copies, Lump sum | \$1,840.00 |

<u>Project Management/Field Support (60 hours @ \$95.00/hr)</u>	<u>\$5,700.00</u>
Total	\$41,535.00

Please note that although it is fully expected that the divers' survey should be completed in one day, two days have been budgeted to allow for any unexpected conditions at site such as bad weather, poor visibility, etc. Further, there would be no reduction in the mobilization/demobilization fees if the divers' survey is completed in one day. Once authorization to proceed with the divers' survey has been received by Fairweather Pacific LLC, it is expected that the onsite work will commence within fifteen (15) days.



Summerland Well Research

Phase I Project Report

Research Results & Notes

Please refer to Section 2 herein for a summary of the documents located at CSLC and DOG. Please note that following review of the contents of these documents, it was concluded that not all were pertinent to this study.

1. California State Lands Commission Research Results
2. CSLC Research Notes
3. Division of Oil & Gas Research Results
4. DOG Research Notes

References

Please refer to Section 3 herein for copies of reference documents relevant to the discussion presented in the text of the Phase I Report and the conclusion(s) drawn therein.

1. Alan Grosbard letter to Fairweather Pacific LLC, 04-28-2000
2. "Exhibit Map" by Mark E. Reinhardt, undated.
3. Regional Wildcat Map, W3-1, Marginal Map B, Summerland Oil Field, 4/24/1999
- 4A. USGS Bulletin 321, Geology and Oil Resources of the Summerland District, 1907, Plate VII, Section Through Treadwell Wells.
- 4B. USGS Bulletin 321, Geology and Oil Resources of the Summerland District, 1907, Plate VI, Structure Map of the Summerland Oil Field Showing by Contours the Distance Below Sea Level of the Upper Main Oil Sand "A".
5. Jon Lindbergh Report "An Analysis of Possible Means of Removing Approximately 90 Old Oil Well Casings from the Beach and Nearshore Area Off Summerland, California", 02-10-1961.
6. CSLC Calendar Item 82, "Declaration of a Hazard to Include in the Coastal Hazards Inventory Oil Seepage from Old Abandoned Wells Located in Summerland, Santa Barbara County", 08-22-1990.
7. USGS Bulletin 321, "Geology and Oil Resources of the Summerland District," 1907, Description of the Wells, pages 39 to 50.
8. CalDive, Excerpt from "Daily Record of Work Performed," 08-14-1967.
9. Division of Oil & Gas letter, 04-07-1975.



Summerland Well Research

Phase I Project Report

10. CSLC Internal Memo, "Summerland Oil," 07-14-1989.
11. USCG Memorandum, "Summerland Well Abatement Discussion," 06-16-1994.
12. USCG Memorandum, "Summerland Beach Oil Well Abandonment Update," from Capt. E.E. Page, Federal On Scene Coordinator, 02-24-1995.
13. CSLC Internal Memo, "Summerland Beach Clearance Project No.1," 08-08-1967.
14. CSLC Internal Memo, "Summerland Beach Clearance Project No.2," 09-19-1967.
15. CSLC Internal Memo, "Removal of Hazardous Conditions – Summerland & Ellwood Areas," 07-21-1975.
16. CSLC Internal Memo, "Summerland Cleanup – Abandonment of Old Wells," 08-05-1976.
17. Pete Burmis letter, 01-16-1981
18. Division of Oil & Gas, "Report on Operations," for locations 10, 11 & 13, 06-15-1993 & 08-13-1993.
19. CSLC Internal Memo, "Summerland Oil Well Abandonments – Re-evaluation," 03-16-1995.
20. CSLC Internal Memo, "Location of Offshore Oil Seeps...," 10-08-1980.
21. CSLC Internal Memo, "...Oil Seep Location and Containment...," 04-08-1981.
22. CSLC Internal Memo, "Aerial Survey...," 12-19-1986.
23. Chart of Tidal and Submerged Lands Off Summerland, California "Lindbergh Map," Section at Treadwell Wharf, 05-1960.
24. Typical handwritten daily diary sheet from 1968 CSLC Abandonment, 11-22-1968
25. PENCO – Summerland Oil Well Abandonment Project – Vol 3, Section 1, "Summary of Priority Sites," and Section 4, "Targets 19 & 27,"



Summerland Well Research

Phase I Project Report

Section 2

Research Results



Summerland Well Research

Division of Oil and Gas Research Results

Item	Date	Summary of Contents
Well Operations Report	08-13-1993	State Lands Commission Well #11 on beach east of Sunset Wharf cemented reference CCC Application E-92-7. Also have IDS map showing locations and coordinates of 12 onshore targets including Wells # 10, 11 & 13.
Well Operations Report	08-13-1993	State Lands Commission Well #10 on beach at Sunset Wharf cemented reference CCC Application E-92-7.
Well Operations Report	06-15-1993	State Lands Commission Well #13 on beach at Sunset Wharf cemented reference CCC Application E-92-7.
History of Oil or Gas Well(s)	6/7-1985	Twenty-one (21) California Oil Co. wells, A, B, C, D, F, G, H, J, K L, M, N, O, P, Q, R, S, U, V, W & X, on the bluff between Sunset Wharf and Treadwell Wharf were located cleaned out and cemented by Grayson. Wells E and T could not be located. Also copied was assessor's map of parcels where wells were plugged.
Well Report	06-13-1957	Seaside State #1 on bluff west of Moore Wharf. Drilled to 6191' and cemented.
Well Report & Well Designation Change	10-13-1937	Well 17-6. Plotted to be outside area of interest for this study.
Well Report	05-02-1933	Summerland #1 near Temple & Lillie Streets. Drilled to 5041' and cemented.
Well Report	04-10-1930	Seaside Fee #1 near edge of bluff east of Sunset Wharf. Drilled to 3310' and cemented.
USGS	1907	Excerpts from USGS Bulletin 321, "Geology & Oil Resources of the Summerland District" including area maps and geologic charts of Treadwell cross-section and description of local geology, Plates VI, VII & VIII.
California State Mining Bureau	1896/1897	Excerpts from Bulletin No. 11, "Oil & Gas Yielding Formations of Los Angeles, Ventura and Santa Barbara Counties"



Summerland Well Research

Division of Oil and Gas Research Results

Summary of Research at Division of Oil & Gas, Ventura, CA

Date of Visit(s): Monday and Tuesday, May 1 & 2, 2000 and Thursday June 8, 2000

Contact: Mr. Patrick Kinnear

Files researched consisted of file folders containing 1985 well abandonment records, area charts, well drilling records from the 1930's and forward. No offshore well records from the Treadwell Wharf or Moore Wharf were located. USGS report from 1907 on the oil resources of the Summerland Field was reviewed. CSMB report from 1896 on oil resources of Santa Barbara County (Summerland area) was reviewed.

Summerland Foundation - Summerland Well Research Project

Well Designation	Original Owner	Well I.D. (API#)	Location	Date Well Drilled	Status	Casing Size	Orig. Depth
"A"	Cal Oil Co.	083-04614	Bluff ¹	n/a	Cemented 6-28-85	8"	250' ?
"B"	Cal Oil Co.	083-04616	Bluff ¹	n/a	Cemented 6-17-85	6"	250' ?
"C"	Cal Oil Co.	083-04613	Bluff ¹	n/a	Cemented 6-11-85	6"	250' ?
"D"	Cal Oil Co.	083-04611	Bluff ¹	n/a	Cemented 6-12-85	7"	250' ?
"E"	Cal Oil Co.	--	Bluff ¹	n/a	Cannot locate well	n/a	n/a
"F"	Cal Oil Co.	083-04618	Bluff ¹	n/a	Cemented 7-9-85	8"	250' ?
"G"	Cal Oil Co.	083-04610	Bluff ¹	n/a	Cemented 6-13-85	8"	250' ?
"H"	Cal Oil Co.	083-04619	Bluff ¹	n/a	Cemented 7-10-85	8"	250' ?
"J"	Cal Oil Co.	083-04620	Bluff ¹	n/a	Cemented 7-17-85	7"	250' ?
"K"	Cal Oil Co.	083-04621	Bluff ¹	n/a	Cemented 6-17-85	8"	250' ?
"L"	Cal Oil Co.	083-04622	Bluff ¹	n/a	Cemented 7-12-85	8"	250' ?
"M"	Cal Oil Co.	083-04623	Bluff ¹	n/a	Cemented 7-3-85	5"	250' ?
"N"	Cal Oil Co.	083-04624	Bluff ¹	n/a	Cemented 6-17-85	6"	250' ?
"O"	Cal Oil Co.	083-04625	Bluff ¹	n/a	Cemented 6-20-85	8"	250' ?
"P"	Cal Oil Co.	083-04626	Bluff ¹	n/a	Cemented 6-28-85	8"	250' ?
"Q"	Cal Oil Co.	083-04627	Bluff ¹	n/a	Cemented 6-19-85	5"	250' ?
"R"	Cal Oil Co.	083-04628	Bluff ¹	n/a	Cemented 6-21-85	12" O / 7" I	250' ?
"S"	Cal Oil Co.	083-04629	Bluff ¹	n/a	Cemented 6-24-85	8"	250' ?
"T"	Cal Oil Co.	--	Bluff ¹	n/a	Cannot locate well	n/a	n/a
"U"	Cal Oil Co.	083-04631	Bluff ¹	n/a	Cemented 6-25-85	4"	250' ?
"V"	Cal Oil Co.	083-04612	Bluff ¹	n/a	Cemented 6-18-85	6"	250' ?
"W"	Cal Oil Co.	083-04632	Bluff ¹	n/a	Cemented 7-1-85	8 3/8"	250' ?
"X"	Cal Oil Co.	083-04634	Bluff ¹	n/a	Cemented 6-27-85	6 1/4"	250' ?

Notes:

1. Between Treadwell Wharf and Sunset Oil Co. Wharf

Summerland Foundation - Summerland Well Research Project

Well Designation	Original Owner	Well I.D. or API#	Location	Date Well Drilled	Status	Casing Size(s)	Orig. Depth
Seaside Fee-1/Getty 1	Geo. F. Getty		Bluff	4/7/30	Cemented 4-15-30	18 5/8"	3310'
Summerland-1	G.F. Becker/Getty	T3-1037	Bluff Block 38	6/4/29	Cemented 5-2-33	8"10"12" & 15"	5041'
State Lands #10	unknown	283-20310	Sunset Wharf	early 1900's	Cemented 6-2-93	6"	400'
State Lands #11	unknown	283-20309	btw Sunset & Lillis	early 1900's	Unable to cement	6" / 8"	400'
State Lands #13	unknown	283-20305	Sunset Wharf	early 1900's	Cemented 6-1-93	8"	300' - 400'
Seaside State #1 TEPI	Tidewater Oil Co.	283-01774	Bluff, W of Moore	6/13/57	Cemented 6-3-57		6191'



Summerland Well Research

Notes From DOG Research

Summerland Fault is to the west and projects generally in a line towards the approximate center of Treadwell Wharf. It is not clear that the fault actually intersects with the old pier line.

References:

USGS Bulletin 321, Plate VI, 1907

Regional Wildcat Map, W3-1, Marginal Map B, Summerland Oil Field, 4/24/1999

In line with the Treadwell Wharf, roughly from the edge of the bluff traveling seaward a shallow Oil Sand & Water Layer dips, rises, dips again, rises abruptly to surface before dipping again. This layer is overlain with a Sand & Clay layer, which is probably porous in various locations, thus leading to propensity for natural seeps.

Reference:

USGS Bulletin 321, Plate VI, 1907

Three (3) "problem" wells, two at the shoreward end of the Sunset Oil Co. Wharf, and one to the west of the Lillis Wharf were cemented in 1993 at great expense to the CSLC. It was reported by local residents that, "...none could recount any beach impact since the State Lands Commission properly abandoned several problematic wells in 1991." Please note that the year quoted is incorrect and should be 1993 and only three wells were abandoned after which CSLC ran out of funds.

References:

Well Operations Reports 06-15-1993 and 08-13-1993

USCG Memo by Capt. E.E. Page 02-24-1995 (CSLC Research files)

While at DOG offices it was mentioned that a number of years ago the previous District Deputy discarded a large amount of "old" files that he considered worthless. Considering the lack of historic wells records from the late 1890's it is likely that this type of information had been lost during that purge of files.

Reference:

Conversation with Patrick Kinnear, 05-01-2000



Summerland Well Research

California State Lands Commission Research Results

Item	Date	Summary of Contents
CSLC Internal Memo	03-28-1995	Status memo of progress with Golder, Evans and USCG. Oil Spill Liability Trust Fund opened for \$850,000. Geophysical and Hydrographic Survey completed – 45 targets identified with summary of 7 targets that were excavated. Underwater videos taken of leaking natural seeps. And again Treadwell #10 is identified showing very slight leakage around outside of steel sleeve along with a natural seep between Moore Wharf and Treadwell Wharf. Treadwell #10 is in an area adjacent to suspected natural seepage. Overall consensus is that "large majority of the targeted release sites were found to be associated with natural oil seeps rather than abandoned oil wells." Noticed a significant increase in seeps after the seismic activity of 11 December. Bids received 9/27 for abandoning 3 offshore and 2 inshore wells on T&M basis. Coast Guard will just monitor the situation for now and advise a final decision in May.
CSLC Internal Memo	07-26-1994	Memo outlining proposed abandonment program, including map of wells to be plugged.
USCG to CSLC & others	07-15-1994	USCG cites 5 improperly plugged wells off Summerland as presenting a substantial threat of oil pollution. Will exercise authority to use Federal Oil Spill Liability trust Fund monies to properly abandon 3 intertidal wells as well as 2 suspect wells outside the surf zone.
USCG Minutes of Meeting	06-16-1994	Meeting where CSLC presented information on history of Summerland oil production. Later mention is made of the 3 wells abandoned in 1993, but ran short of funds to abandon the other 3 wells.



Summerland Well Research

California State Lands Commission Research Results

Item	Date	Summary of Contents
CCC Staff Report Application E-92-7	06-12-1992	Permit application to plug and properly abandon 3 wells.
Newspaper Clipping	05-13-1992	State is going to plug the wrong wells. Surfer says his 1-year research into Summerland wells indicates that the 3 wells that state is going to plug are not the ones that are leaking.
CSLC Calendar Item 82 Minutes	08-22-1990	Declaration of Hazard. General description of old drilling, the 1968 cementing of 60 wells with 5' plugs which may not be totally effective leads to justification to include the Summerland Hazard in the Commission's inventory.
Photos (2)	08-06-1990	Oil apparently coming from wells just offshore, looking east from Lookout Park.
CSLC Internal Memo	06-07-1990	Regarding renewed seepage from several old wells, discussing methods for rig positioning, but not mentioning what well(s) it was.
CSLC Internal Memo	07-14-1989	New source of oil outside surfzone – could not locate with divers – flow not consistent
CSLC Internal Memo	12-19-86	Summerland flyover by CSLC mentions 3 oil point sources, leaking Treadwell #10 and 2 others unidentified but off Lookout Park.
CSLC to Energy & Mineral Resources Dept.	04-09-1981	Attempted Oil Seep Location Results of 12/09/80 flyover.
CSLC to Energy & Mineral Resources Dept.	04-08-1981	Oil Seep Location & Containment Freckman #1 identified as natural seep, Treadwell #10 seep to be from abandoned well that was capped twice previously, Treadwell #17 successfully capped as part of this exercise. See Brumis 01-16-81 invoice report.
Pete Brumis (diver) to CSLC	01-16-1981	Report of findings and invoice for services. Inspected oil seep at Treadwell #10, Treadwell #17 cemented
CSLC Internal Memo	10-08-1980	Location of Offshore Oil Seeps Describes Treadwell #'s 10, 17 & Freckman #1, with aerial photos, gives coordinates and obstruction no.s.



Summerland Well Research

California State Lands Commission Research Results

Item	Date	Summary of Contents
DOG to CSLC	07-24-1980	Requesting well SB 635 (Treadwell #17) to be properly cemented and casing cut off/
CSLC to Sec'y for Resources	01-23-1980	Request funds from Oil & Gas Haz Well Fund to abandon leaking oil well
Photo	08-21-1978	Shows seep point off residence of Emma Edwards
CSLC to SB County Supervisors	08-02-1976	Background Information regarding wells and historic well cleanup operations
DOG to Carpinteria Valley Association	04-07-1975	Oil sand outcrops, seeps, well drilling in early 1900's
CSLC Internal Memo Newspaper Clipping SB County to SP Transportation	08-05-1976 08-28-1974 01-18-1974	Williams #1, 2A & 3 & Becker Fee #2 Summerland oil wells to be plugged up 5 idle wells, need right of way access to abandon
Newspaper Clipping	02-06-1973	Photo showing some beach well casings
Diary of Work	07 to 12-1968	Handwritten diary of operator conducting abandonment operations for 60 wells. But there is no way of knowing which specific wells were being worked on.
CSLC Internal Memo	06-05-1968	Bid Evaluation: Summerland Beach Clearance Project – Award to CalDive.
CSLC Contract Requirements	06-04-1968	Beach Clearance Project No. 3, Contract document and requirements for abandonment procedures.
International Divers to CSLC	09-26-1967	Report of work done in CSLC memo of 09-19-67
CSLC Internal Memo	09-19-1967	Summerland Beach Clearance Project No. 2 Describes cementing of 1 well although 3 well locations were subject of the study. "B" on map is the same as "No. 3" on 1 st study. Why?
CalDive Report	08-15-1967	Daily record of work performed in cementing wells. From description, it is a report of the operations described in the 08-08-67 CSLC Memo
CSLC Internal Memo	08-08-1967	Summerland Beach Clearance Project No. 1 Describes operation to plug three wells, 2 on beach and one offshore in 8' water. Map included.
CSLC Internal Memo	04-12-1965	Background on underwater obstructions. Describes Lindbergh's



Summerland Well Research

California State Lands Commission Research Results

Item	Date	Summary of Contents
		activities in general terms in 1960 & 1961. Reviews 3 scenarios for removing obstructions \$26,500, cementing internal casing and remove obstruction \$41,500, or \$700,000 to eliminate all seeps and remove obstructions
Lindbergh Report to CSLC	02-10-1961	Description of oil production background, operators walking away after field became uneconomical, storms destroyed piers equipment and casings crumbled. Seepage will continue indefinitely. Lindbergh mentions 220 wells in the area of which only 80 are known. Provides suggestions for abandonment and casing removal.
Producing Department	05-02-1960	Standard Practice-Well Abandonments Describing procedures to be followed in the abandonment of old wells.
Lindbergh Report to CSLC	02-29-1960	Report of Tidal and Submerged Lands Off Summerland. Generally describes features and typical beach/bar/trough seasonal changes.
CSLC File Note	11-04-1959	Inspection of beach area for oil casings that have been reported to be a hazard – with photos.
Newspaper Clipping	??-??-1957	Photos and article about \$25,000 spent to clear beach
Director of State Finance to SB News-Press	07-30-1957	Brief mention of oil production prior to Act of 1921, natural seepages from oil sands exposed in the face of the bluff. \$25,000 was appropriated for FY56-57 to remove obstructions – approximately half were removed.



Summerland Well Research

California State Lands Commission Research Results

Summary of Research at California State Lands Commission; Long Beach, CA

Date of Visit: Tuesday 16 May 2000

Contact: Mr. Al Willard

Files researched consisted of 1 box containing several file folders. Contents of file folders related to correspondence, reports, charts and photos for Work Orders WO 3399 and WO 9579 which pertain to periodic cleanup, debris removal, abandonment and surveying operations from approximately 3rd quarter 1949 through 1st quarter 1995. No well records were available at CSLC.



Summerland Well Research

Notes From CSLC Research

Treadwell #17 geologic cross-section indicates an "Oil Sand & Water" layer that reaches the seabed surface. Correspondence and survey reports indicate seepage from Treadwell #17 being observed. Surprisingly, no portion of seep activity at Treadwell #17 was ever reported as natural in origin. Well was cemented with short plug on 12-19-1980 and later observed that no oil was leaking around plug.

References:

USGS Bulletin 321, Plate VII, 1907

CSLC Internal Memo, 10-08-1980

Pete Brumis letter of 1-16-1981

Treadwell #10 geologic cross-section indicates a "Water Sand" layer a short distance below the sand and clay layer than comprises the natural seabed. This layer is near a high point in its formation at Treadwell #10. The well penetrates several sand and clay layers until it terminates in an oil sand. Repeated correspondence and survey reports indicate seepage from Treadwell #10. Attempts to cement the well have been carried out twice in the past. Some seepage is evident around outside of casing. Sediment around casing is oiled – seep may be natural possibly using the outside of the well casing as a conduit.

References:

USGS Bulletin 321, Plate VII, 1907

CSLC Internal Memo, 04-08-1981

CSLC Internal Memo, 12-19-1986

CSLC Internal Memo, 03-28-1995

In looking at the recent "Exhibit Map" prepared by Mark E. Reinhardt which shows locations of recent oil seeps on surface, it is obvious that these locations generally correlate to Treadwell #10 and the natural seep just east of the Moore Wharf.

References:

Mark E. Reinhardt "Exhibit Map" date unknown but most likely is late 1999 or early 2000.

CSLC Internal Memo, 03-28-1995

Results of 1994-1995 survey operations indicate that majority of seeps in Summerland area are natural rather than from abandoned oil wells.

Reference:

USCG Memo from Capt. E. E. Page, 02-24-1995

The Lindbergh Survey of 1960 located approximately 80 casings. The map shows these sites and the Treadwell Wharf location is obvious. The furthest seaward of Lindbergh's targets at the suspected Treadwell grouping, scales to be approximately Treadwell #10. Lindbergh points out that the Structure Map, USGS Bulletin 321, Plate VI indicates 220 beach and wharf well sites which leaves 160 well sites not located during Lindbergh's survey. So it is possible then that some of the seeps observed could be coming from either well sites or natural. There would be no way of conclusively knowing without jetting down or some other form of location method.



Summerland Well Research

Phase I Project Report

Section 3 References

ALAN Z. GROSBARD
ATTORNEY AT LAW
1888 CENTURY PARK EAST, SUITE 960
LOS ANGELES, CALIFORNIA 90067
TELEPHONE (310) 277-0505
TELECOPIER (310) 277-5700

April 28, 2000

Tom Kennedy
Fairweather Pacific LLC
4567 Telephone Road
Suite 203
Ventura, CA 93003
Facsimile: (805) 658-5605

Re: Summerland Well Research Project:

Dear Tom:

At this time, I am organizing on behalf of my client C. Anthony Thomas, a California non-profit corporation to be named the Summerland Foundation.

On completion of its formation, the Summerland Foundation will formally engage Fairweather Pacific LLC to research and recommend appropriate measures for abandonment of wells in the historic Summerland Oil Field identified as the Moore Wharf Wells, the Treadwell Wharf Wells, selected Sunset Oil Co. Wharf Wells, and selected on shore wells located North of the Treadwell and Moore Wharfs.

The specific focus will be to determine:

1. Whether these well sites are the cause of current oil seeps in the Summerland Oil Field, and
2. If so, what remedies are appropriate.

To accomplish these two (2) goals, we ask that Fairweather Pacific LLC perform the steps identified as Phase I of the Fairweather Pacific LLC proposal of April 7, 2000. On satisfactory completion of Phase I, we expect to promptly move forward on Phase II.

On behalf of the Summerland Foundation, I am authorized to approve commencement of Phase I at this time. C. Anthony Thomas personally guarantees payment to Fairweather Pacific LLC for all Phase I work.

ALAN Z. GROSBARD
ATTORNEY AT LAW

Tom Kennedy
Fairweather Pacific LLC
April 28, 2000
page two

I would appreciate periodic status reports as the work progresses. Thank you for your attention and assistance.

Very truly yours,

ALAN Z. GROSBARD

AZG/sp
cc: Karen Bobo
Anita De Thomas
Tony Thomas

SANTA BARBARA OIL AND
MINING CO.



MARINE OIL CO.

* Oil Seep
* Oil Seep

TREADWELL OIL CO.

* Oil Seep
* Oil Seep
* Oil Seep
* Oil Seep
* Oil Seep

SUNSET OIL CO.

LILLIS
OIL CO.

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1782-38 • 1785-1234 • 10/09 • 1 • 1

EXHIBIT MAP

Reference #2

T 4 N R 26 W

Chevron
"Ortega Comm."
35-5987

Southern Explor. Co.
"Brooks"
29-414

R.L. Williams
?-455

R.L. Williams
?-450

R.L. Williams
"Williams"
1-B 37-4121

Southern Explor. Co.
29-517 29-1221

H.E. Furdum, et ux & Son
"Kilb"
34-390

R.L. Williams
?-1100

Potomac
Wells

S.P. Land Co.
"S.P. Summerland"
30-1317

Russell L. Williams
"Becker Fac."

Russell L. Williams
"Williams"

Russell L. Williams
"State Lease 16, Getty"

43-1474 11
43-1552 21

SUMMERLAND
STATION

Eureka Cons.
Oil Co.

Seaside
Oil Co.

B.C. Morrison
29-1604

J.C. Wilson

TEPI
"Seaside-State"
Chevron
57-6191

Standard-Tw.
State

Calif. Oil Co.

Williams, Russell L.
"Summerland"
33-5041

Miller Oil Co.

30-3310
Seaside Oil Co.
Getty

State Lands Commission

Sandoma Gasoline Co.
"State Lease 18, Sandoma"

30-1174

SOUTHERN
U. S. PA

Sunset Oil Co.

Ellis Wharf

Sunset Oil Co. Wharf

Harvard Wharfs

S. Pac. Oil Co. Wharf

S. Pac. Oil Co. Wharf

Dupres

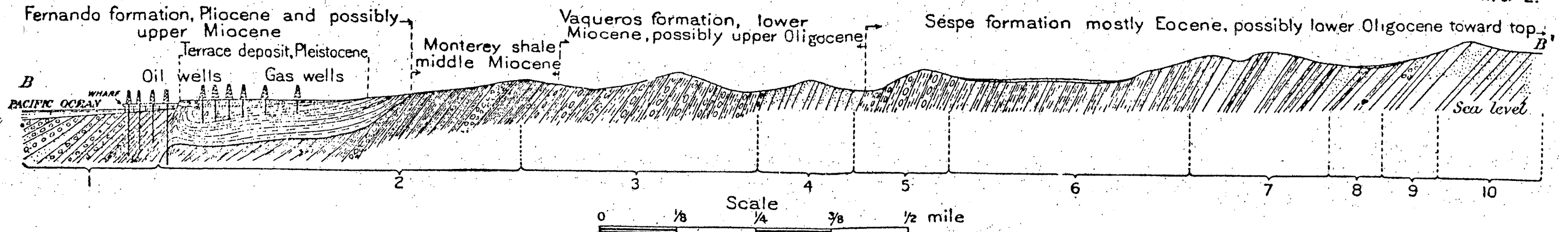
MARGINAL MAP B
SUMMERLAND OIL FIELD

SCALE:
0 300 600 900 FT.

LEGEND

- SITE OF OLD PIERS
- + OLD ABANDONED WELLS, NO RECORDS
LOCATION FROM U.S.G.S. MAP DATED 1907
- PRODUCING - OIL
- ⊙ ABANDONED - DRY HOLE
- ⊙ ABANDONED - OIL
- ⊙ ABANDONED - GAS

Reference #3

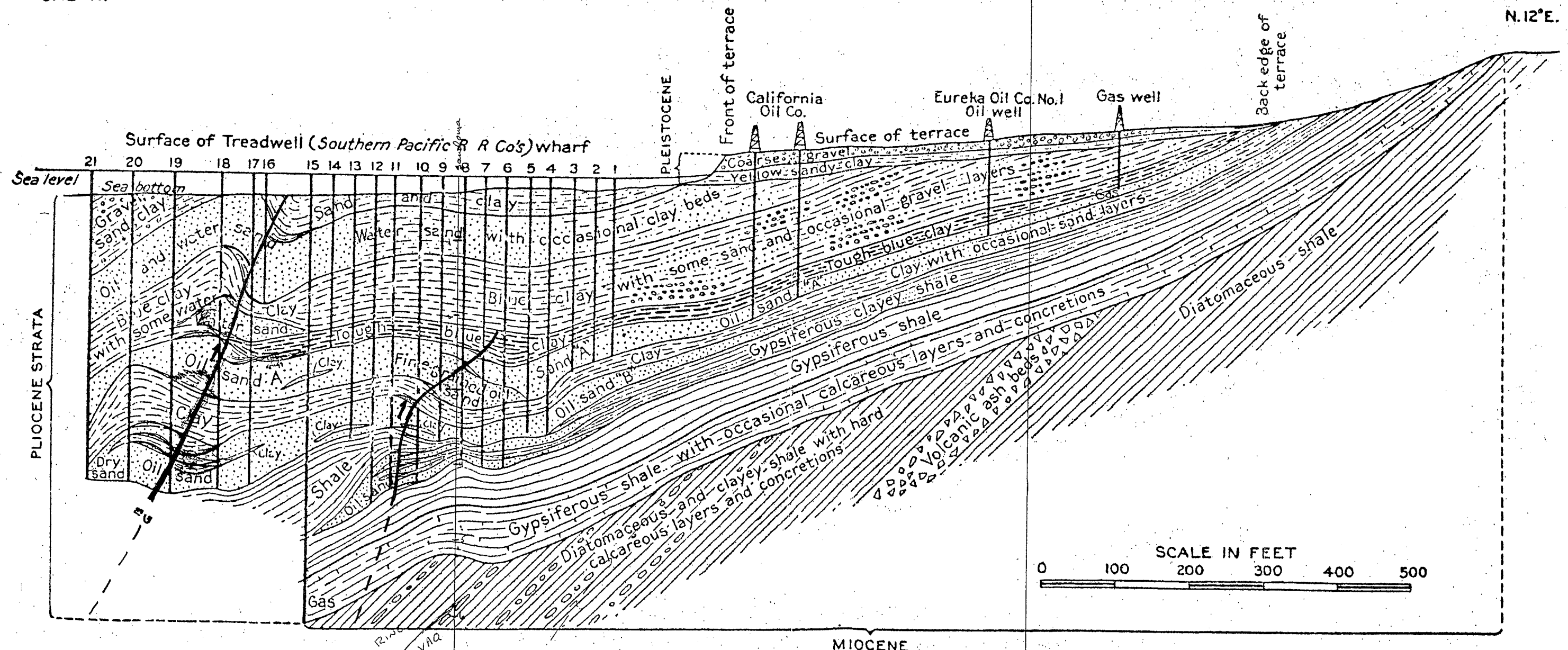


1. GEOLOGIC SECTION ON LINE B-B' OF PLATE I.

From a point northwest of Summerland N. 61° E. to knoll in forks of Toro Canyon, 2 miles northeast of Summerland.

S. 12° W.

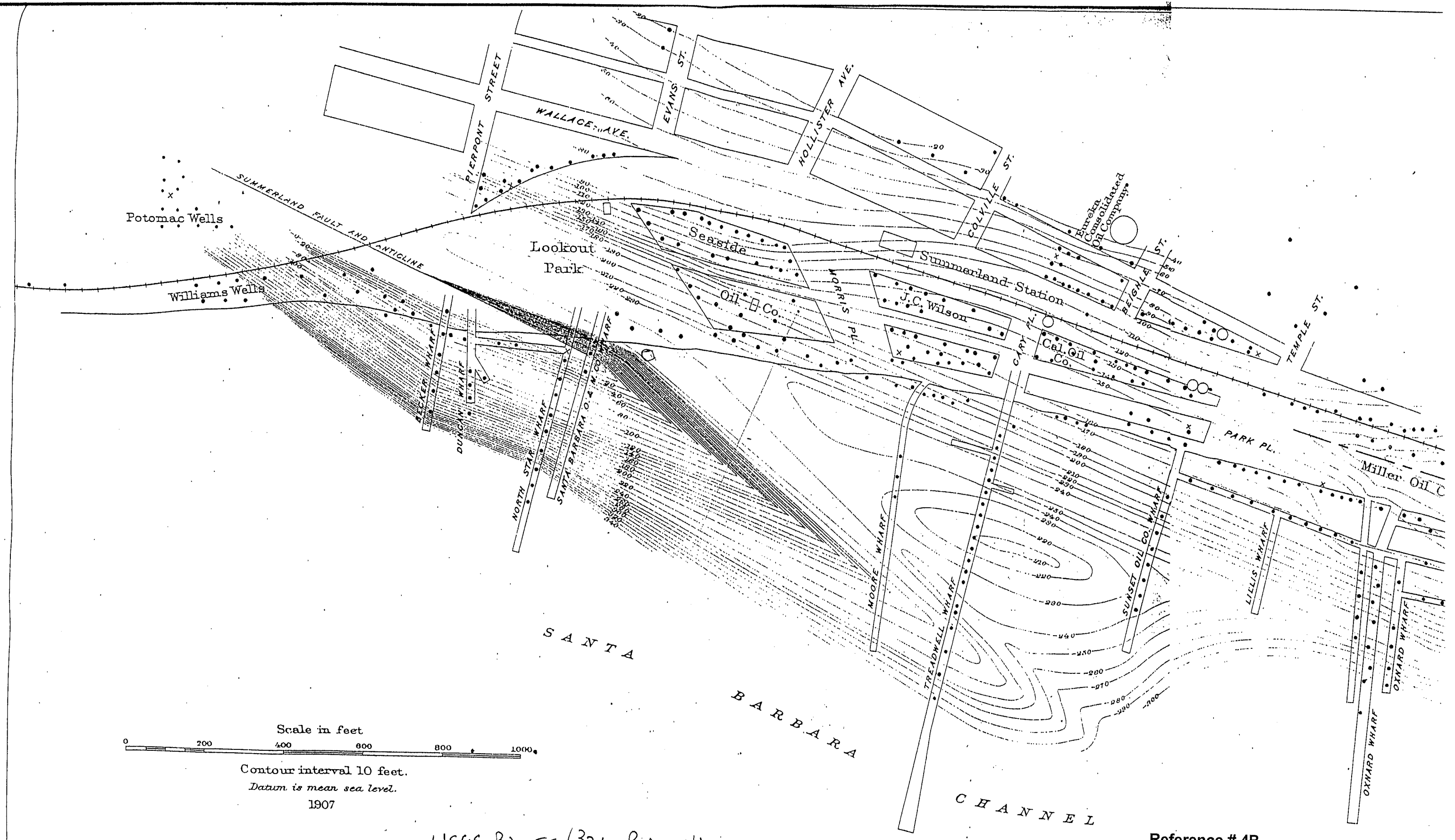
N. 12° E.



B. SECTION THROUGH TREADWELL (SOUTHERN PACIFIC COMPANY'S) WELLS.

Reference # 4A

N. 12° E. to a point immediately northwest of big oil tank in Summerland. Section is about 1,000 feet west of Oxnard wharf. (See Pl. VIII, Section C.)

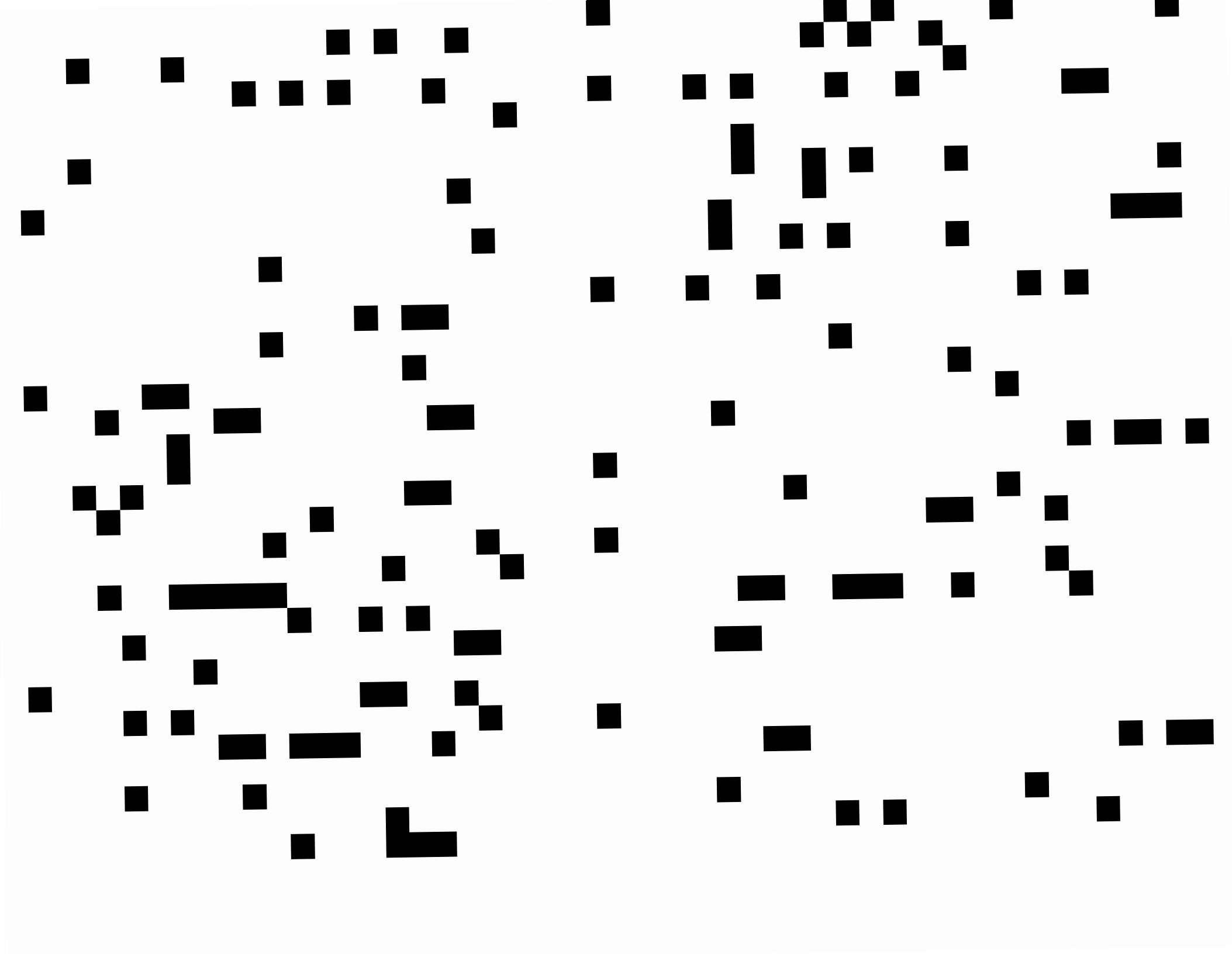


USGS BULLETIN 321 PLATE VI

Reference # 4B

Base by Geo. H. Eldridge, 1902.
Contours by Ralph Arnold, 1906.

STRUCTURE MAP OF THE SUMMERLAND OIL FIELD, SHOWING BY CONTOURS THE DISTANCE BELOW SEA LEVEL OF



AN ANALYSIS OF POSSIBLE MEANS OF REMOVING APPROXIMATELY 90
OLD OIL WELL CASINGS FROM THE BEACH AND NEARSHORE AREA OFF
SUMMERLAND, CALIFORNIA

Prepared by: Jon M. Lindbergh
3749 Garden Lane
San Diego 6
California

Rendered on February 10, 1961 in accordance with the
instructions of STATE LANDS COMMISSION W.O. 3399

CONTENTS

Background	Page 1
The Oil Seepage Problem	1
A. General	1
B. Controlling the Seepage	2
C. The Effects of Blasting on Seepage	3
D. Conclusions	3
Methods of Casing Removal	4
A. General	4
B. Specific Methods of Cutting and Removal	4
C. Comments on Applicability of Methods	4
Debris Removal	6
Conclusions	7
Recommendations	7
Credits	8

Enclosures: Figures 1 thru 5

Structure Map of Summerland Oil Field

AN ANALYSIS OF POSSIBLE MEANS OF REMOVING APPROXIMATELY 90
OLD OIL WELL CASINGS FROM THE BEACH AND NEARSHORE AREA OFF
SUMMERLAND, CALIFORNIA

BACKGROUND

A brief history of the area will be given here to provide a background for discussion in sections of the report to follow.

The main oil bearing sands in the part of this field under consideration lie from very near the surface to about 300 feet below mean sea level. (See enclosed STRUCTURE MAP) Drilling was very likely initiated because of natural seeps which are reported to have been present in the area. In the late nineteenth century at least 220 wells were drilled in the beach and submerged lands off Summerland.

Most of the drilling was done by small companies and even by individuals who leased space on wharves. Techniques were crude. Many of the wells are reported to have been drilled with water-well equipment. Casings were in all probability not cemented to the formation immediately overlying the oil sands. Such cementing is carried out in all modern oil wells. (See fig. 1) When wells were damaged or the casings carried away by the sea the operators often did not try to repair or even seal off the original hole. They merely drilled another next to it. In 1904 the field ceased to be profitable and the operators walked off. So far as is known few if any of the wells were properly abandoned. The wharves, casings, and associated equipment were left to crumble into the sea.

THE OIL SEEPAGE CONTAMINATION PROBLEM

A. General

Most of the casings appear to be completely filled with sand, rocks, and debris. Salt water almost certainly penetrates down through this porous medium and into the depleted oil-bearing sands below. Any oil present tends to be displaced by the denser salt water and works its way out the well to the surface. (See fig. 1) Fresh oil is very likely still slowly entering the depleted sands from a source area deeper in the

earth. Thus seepage may continue almost indefinitely.

An oil slick several acres in extent has been present at the west end of the Summerland Beach on the three occasions we have visited the area. Globules of a thick tarry material could be seen here and there in the slick. Oil was observed discharging from two or three well casings seaward of the low water line. Several casings on the beach evidenced some seepage and one was discharging about one-half cup per hour. Gas bubbles were also observed in the latter case. Some of the slick appeared to be coming from further west than the area surveyed in May, 1960. Several recently abandoned wells above the seawall in the area marked "Williams Wells" on the enclosed STRUCTURE MAP are seeping oil which may find its way into the ocean. A rusted out storage tank in the same area still contains a considerable amount of oil, some of which is spilling out through a bullet hole. Other oil from old wells and natural seeps still further to the west may enter the picture.

Oil company officials in Santa Barbara report that seepage is quite sporadic, with much more discharge at some seasons than at others. They also mention that the major oil companies are blamed by the local populace for any and all oil that contaminates the water and beaches. Conversations we have had with people within sight of the old leaking casings confirm this belief. Point to the oil slick and they point to the offshore towers.

B. Controlling the Seepage

Stopping all the oil seepage would be extremely difficult or impossible. There is no known way to block natural seeps. Another problem is the wells which are broken off and buried below the minimum sand level. The survey of May, 1960, located about 80 casings. The enclosed STRUCTURE MAP shows at least 220 in the same area. Hence 140 are not accounted for. Many of these are almost certainly seeping oil. To locate and dig them up would be prohibitively expensive.

In order to completely close off a well it would be necessary to build a platform over the well and mill away the casing down into solid rock. (See fig. 2) Then the hole could be cemented and the well completely sealed off. The reason for milling and cementing below the top of the first rock level is to prevent seepage between the casing and drill hole, or between concentric casings. The cost per well of doing the job by this technique is estimated to be about \$10,000 for wells in or seaward of the surfline and perhaps half that for wells on the beach.

The majority of seepage in an individual well could probably be stopped by cleaning the sand, rocks, and debris out of the inner casing and placing a cement plug inside. (See fig. 5) Our experiments indicate that most of the casings can be cleaned out without too great difficulty. We have been advised by a firm in the oil well cementing business that a five foot plug should be adequate for an 8" diameter inner casing. For a 6" diameter casing, four feet should suffice. Pure construction grade cement may be used for this type of plug. No sand or gravel need be added. The cement may be introduced into the casing by means of a pump or a dump-bailer. If the latter is used the casing will, of course, have to be freed first of all internal obstructions.

If the casings are to be blasted off below the sand line, the cement must be introduced prior to the shot. It is strongly recommended that in this case the shot be fired before the cement begins to set. Otherwise a short plug may be seriously damaged by the blast. The additional cost of closing off 90 wells by this technique over and above the cost of cutting the casings by internal blasting is estimated at about \$14,000.

C. The Effects of Blasting on Seepage

The opinions of oil company officials differed on the possible effects of blasting operations on seepage. Explosions of the largest size conceivably necessary to remove the casings are unlikely to affect the main oil bearing sands. However, blasting could possibly dislodge sand, rust, and tar plugs presently in the casings and thus cause at least a temporary increase in flow.

D. Conclusions

An unpleasant amount of oil contamination is now present in the Summerland Beach area. Much of this can probably be eliminated by relatively simple and inexpensive cementing operations. More complete, but vastly more expensive cementing operations could stop more of the contamination, but would not eliminate it completely. In view of the above situation serious consideration should be given to closing off each well with a short cement plug. It is to be emphasized that if the wells are not sealed off prior to cutting the casings below the minimum sand level, it will be next to impossible to locate, dig out, and seal them off at any time thereafter. A proper cleanup and abandonment of the "Williams Wells" area would also help alleviate the contamination problem.

METHODS OF CASING REMOVAL

A. General

The old wells in the Summerland area generally have two concentric casings and some have three. The thickness of individual casings varies up to $\frac{1}{2}$ inch. Rods and tubes are occasionally present within the inner casings. Most, if not all of the casings, including the spaces between concentric casings, are packed with sand, rocks, rust, tar, and other debris. Much of the metal is in poor condition. A large percentage of the casings are bent, twisted, or otherwise deformed. Casings beyond the surfline are heavily encrusted with marine growth.

B. Specific Methods of Cutting and/or Removal

(a) Milling. By this system the casing or several concentric casings are simply chewed up by a large and powerful cutting head. (See fig. 2)

(b) External and (c) Internal casing cutters. (See figs. 3 & 4) The casing is cut by a series of adjustable knives which project from a device which is slipped over or into the casing as applicable. The cutter is rotated from above.

(d) Internal shaped charges.

(e) External shaped charges.

(f) Internal bulk charges. (See fig. 5)

(g) External bulk charges.

(h) Hydrogen torches and oxygen-arc cutters.

(i) Chemical cutters.

C. Comments on Applicability of Methods

(1) Methods (a), (b), and (c) must be worked from a stable platform. A barge, being subject to wave action, would not be adequate. Of the three methods, milling is the one most suited to the situation at Summerland. It would allow complete cementing of the well besides eliminating the casing. An external cutter could not under any circumstances be put in position below the top of the first solid rock formation. It would be difficult to work it down any distance at all through the cobbles and debris prevalent in the area. An internal cutter would probably encounter difficulties due to irregularities in the old casings. The cost of doing the job with external or internal cutters would be approximately the same as for doing it by milling. Total cost for the job is estimated at \$700,000.

(2) Internal shaped charges are limited in the amount of explosive which can be placed behind the lined cavity. This is critical with respect to the penetration or cutting power of the jet. It would be difficult to design an internal shaped charge that could, for instance, be fired inside a 6" diameter casing and also cut through outer 8" and 12" casings plus the intervening sand and debris. An internal shaped charge would also be hard to insert into deformed casings.

(3) External shaped charges would be very effective for cutting casings at or above the sand level after marine growth has been removed. They are difficult to get into position much below the sand level. They can be constructed large enough to cut through several concentric casings plus any rods, tubes, and debris present. The cut from such a charge is clean and will allow access to the inner casing for clearing out sand and debris prior to deeper internal shots and/or cementing.

Mr. Guv Throner is designing an external shaped charge with this project in mind. It will be hinged to allow easy placement. The cost of each unit has not as of this writing been determined, but it will not exceed \$75. A maximum of 40 units would be needed for the job. If the removal method adopted indicates the use of external shaped charges, we strongly recommend this unit.

(4) Internal bulk charges are placed inside the casing. (See fig. 5) Their use will require that the inner casing be cleared of sand and debris, possibly to a depth of from four to six feet below the sand level. Our experience indicates that this is feasible. Considerably less explosive is necessary than for an external charge, as explosions working from the inside of a structure are more efficient. Since the charge is placed well below the sand line, blast damage to marine life is minimized. For the same reason this charge can be used for beach wells without danger to nearby buildings.

The explosive should be in intimate contact with the walls of the casing for maximum effect. A high strength, high brisance explosive should be used. Aerojet General Corporation manufactures a liquid explosive, AEREX, which we feel has excellent characteristics for internal bulk charges. It has high strength and brisance and is sufficiently dense to allow pouring underwater.

In general we feel that if the casings are cut four feet below the minimum sand level in April, May, or June, there will be no danger of their protruding again. If the casing emerges on top of a sand bar, a deeper cut, depending on the height of the bar, should be used.

If the casing is badly plugged with internal rods and tubes or other debris, an internal bulk charge may not be practical. In such a case an external bulk charge might be used and any cementing forgotten.

(5) External bulk charges are relatively cheap and are easily put in position at or slightly below the sand level. The blast effect of a 25 pound charge would break off the casing and smash the remains of the stub at least 18" below the level of the charge. Thus such a charge properly placed 12" below the sand level would effectively cut off the casing 30" below the sand level. It is important that the charge be in close contact with the casing over as wide an area as possible. Explosives used for charges of this nature should have a strength and brisance equal to or greater than those of TNT.

External bulk charges have some disadvantages. The blast effect is greater and hence has a more destructive effect on marine life than other types of charges under discussion. The blast effects would also dictate against its use on the beach. Charges of this type fired in the water would throw up a considerable geyser and possibly attract unfavorable attention. The tops of the inner casings will, of course, be thoroughly mangled and sealed off against any further work.

(6) Hydrogen torches and oxygen-arc cutters are difficult to utilize in the surf zone. Their use is time-consuming and would encounter difficulty with the rust and debris between concentric casings. It would be very difficult to cut the casings much below the sand level with such equipment. We do not consider it efficient for most of this project.

(7) Chemical cutters, for a variety of reasons, would be unsuitable for this project. They would encounter particular difficulty with concentric casings.

DEBRIS REMOVAL

Considerable amounts of debris are present on the beaches and in the nearshore areas. More will result from casing removal operations. Most of this is a potential hazard to swimmers. Some of the larger material, such as old boilers, will probably have to be blasted out of the sand prior to removal. We suggest that all the debris be hauled 1000 feet off the beach and dumped. In that area it can cause no harm to anyone and will provide an excellent habitat for lobsters and other marine life. Estimated cost of debris removal: \$14000.

CONCLUSIONS

It is apparent that there are various methods and combinations of methods which can be used to seal off and/or remove the old well casings in the Summerland area. A summary of the most efficient ones with respect to cost is given below. All costs include debris removal.

(1) Locate all wells, buried and exposed, with mine detectors or metal detectors. Mill casings down into bed rock and cement off. This method would completely eliminate all casings, but probably would not, because of natural seeps, stop all contamination. The cost is difficult to estimate, but would very likely run into several million dollars.

(2) Mill all projecting casings down into bed rock and seal with cement. This would stop all seepage from those wells, but buried casings (which might sometime be uncovered) and buried seeps will still be present. Estimated cost: \$700,000.

(3) Open up internal casings, put in short cement plugs, and shoot off all casings just above the plug with an internal bulk charge. The cement plug must not have set before the charge is fired! Projecting or damaged casings will often have to be shot off first with external shaped charges in order to get at and open up the internal casing. This method will prevent any of the casings worked on from again protruding and will stop a large part of the seepage. (See fig. 5) Estimated cost: \$41,500.

(4) Shoot casings with internal bulk charges as in (3) above but without cementing. Estimated cost: \$26,500.

(5) Shoot casings on the beach with internal bulk charges; shoot casings in surf line and nearshore area with external bulk charges; no cementing. This is the most economical method, but will not be as effective as (3) or (4) above. Estimated cost \$20,000.

RECOMMENDATIONS:

It is our recommendation that method (3) above will give the most productive return for the money spent. If it is decided not to cement the casings, method (4) is recommended over method (5).

The following individuals and firms were very generous in their donation of time and knowledge towards the completion of this report.

Mr. Henry Wright
Western Oil and Gas Association
Los Angeles

Mr. David Goodwill and staff
Standard Oil Company of California
Western Operations, Inc.
Santa Barbara

Mr. Guy C. Throner
Aerojet General Corporation
Downey

Mr. E.E. Clark
Phillips Petroleum Co.
Santa Barbara

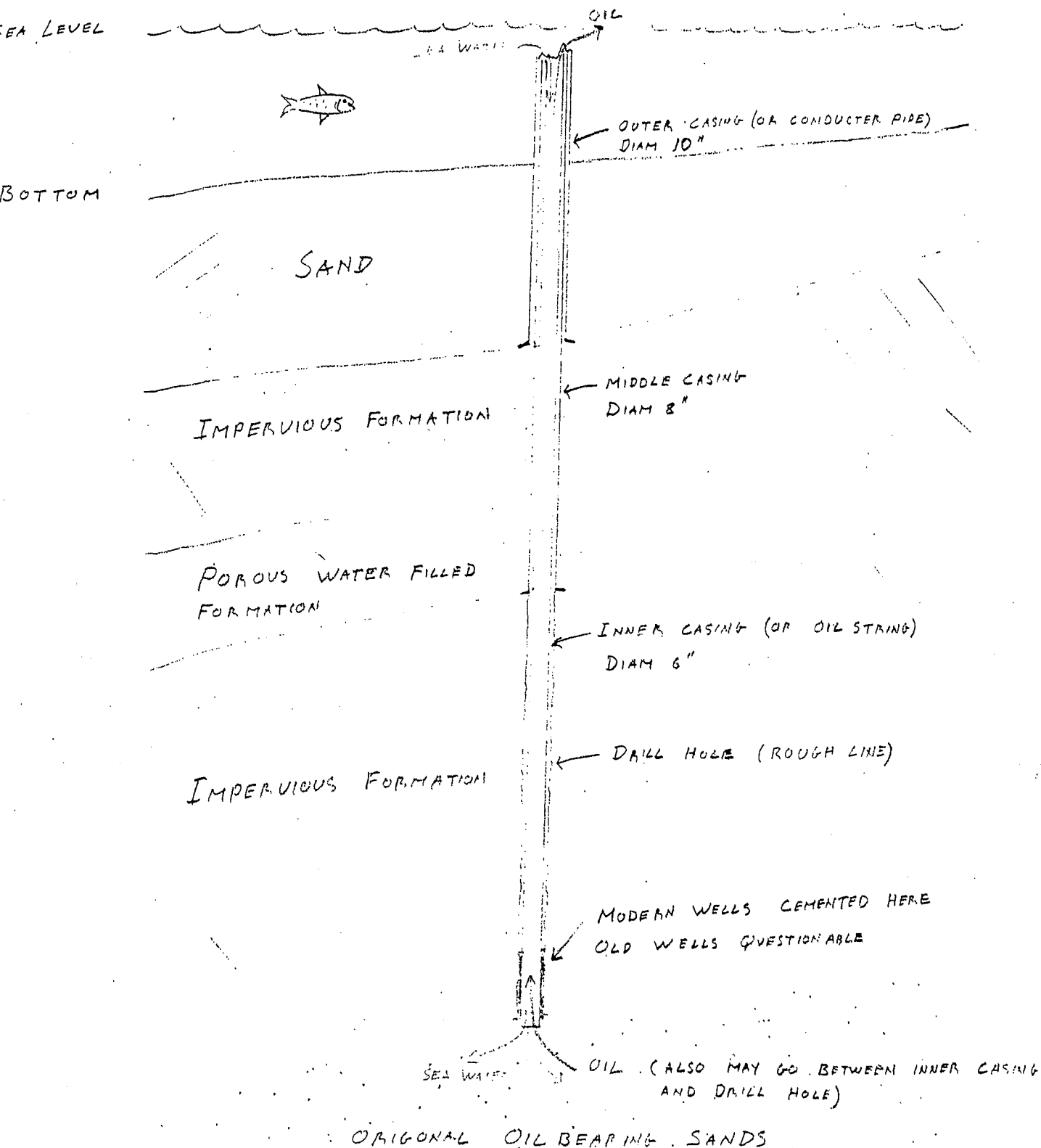
Mr. Higgins
Halliburton Oil Well Cementing Co.
Montalvo

Mr. Harry Gilmore and staff
McCullough Tool Co.
Ventura

Mr. Sam Dolman
Retired (Commissioner of Natural Resources?)
Santa Barbara

FIGURE 1

DIAGRAM OF TYPICAL OLD W. L.
OFF SUMMERLAND, CALIF



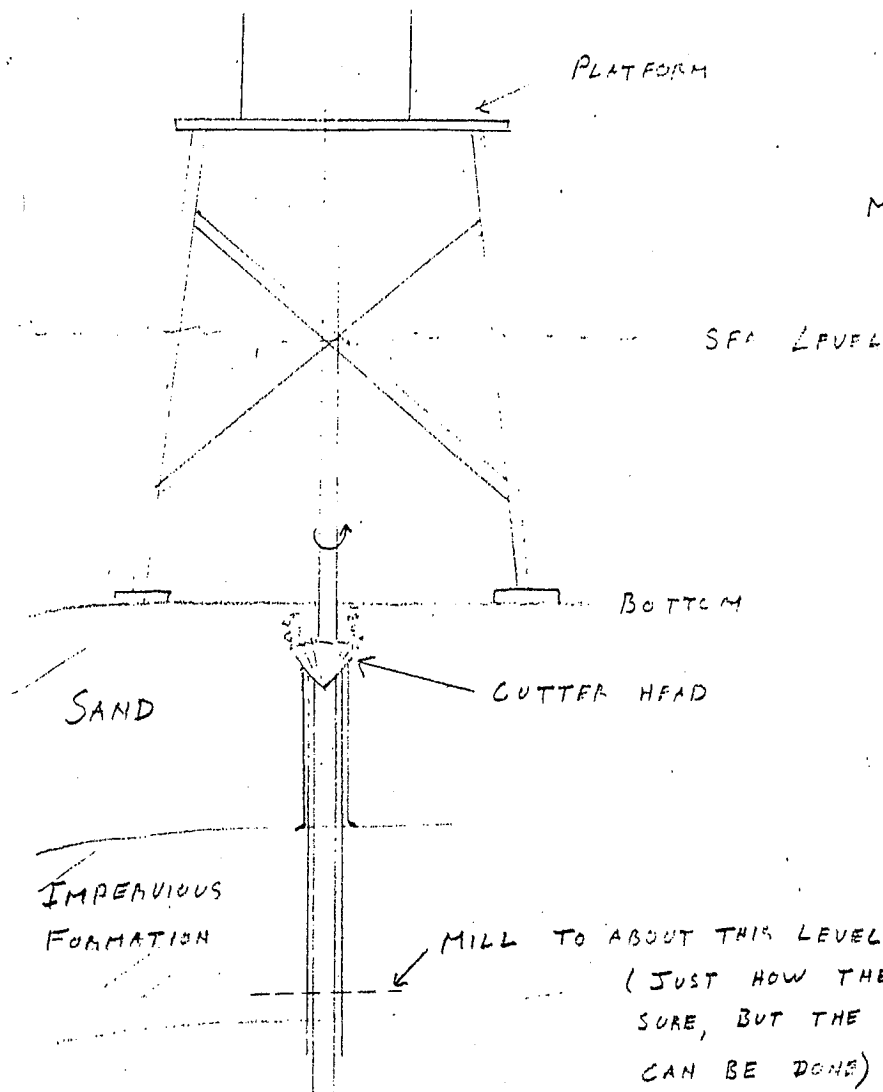


FIGURE 2

MILLING DOWN A CASING

FIGURE 3

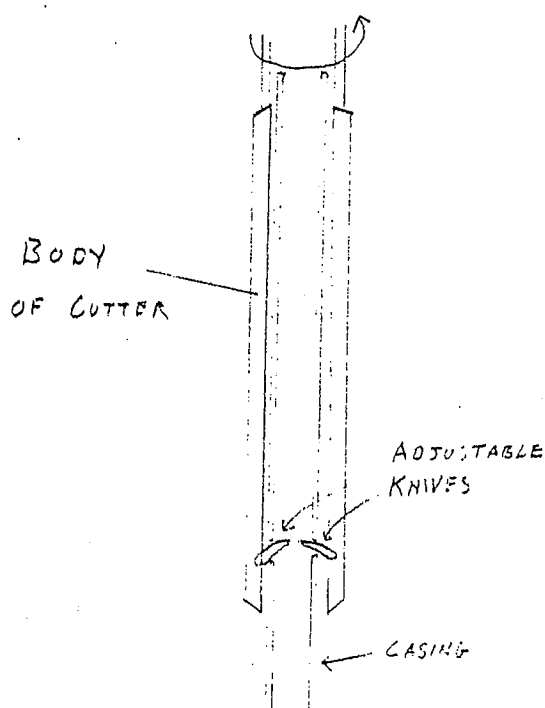
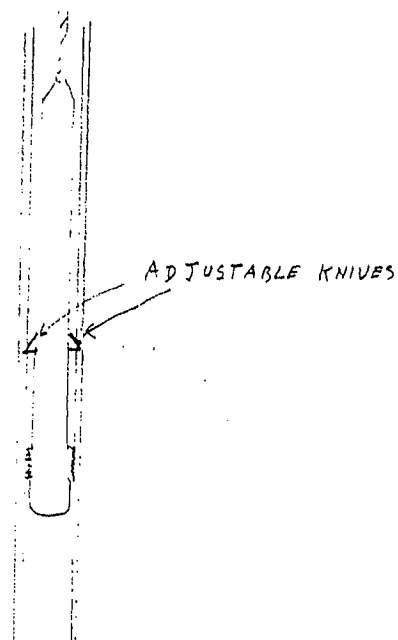


FIGURE 4



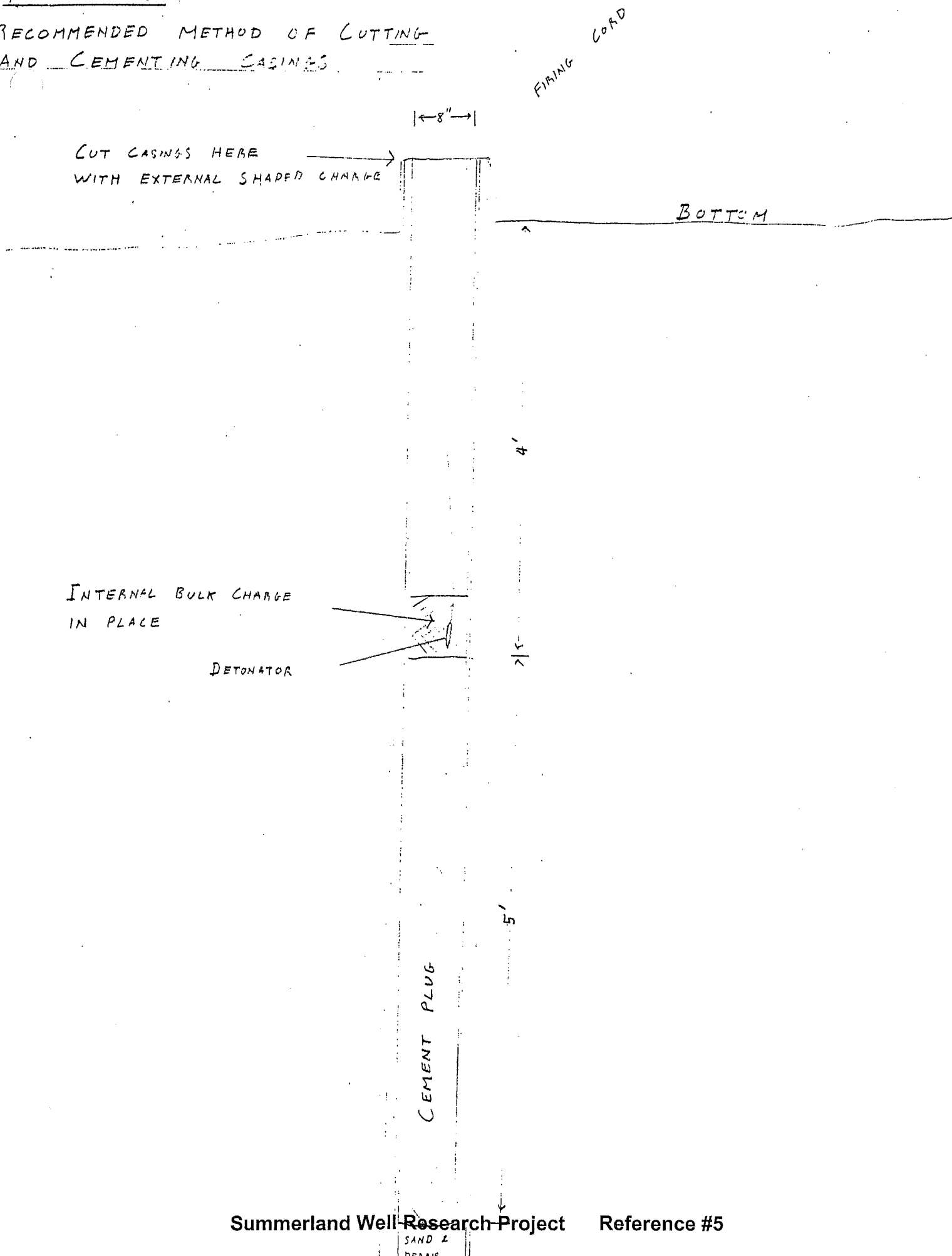
EXTERNAL CUTTER

Summerland Well Research Project Reference #5

INTERNAL CUTTER

FIGURE 5

RECOMMENDED METHOD OF CUTTING
AND CEMENTING CASINGS



MINUTE ITEM

This Calendar Item No. 82
 was approved as Minute Item
 No. 82 by the State Lands
 Commission by a vote of 3
2 at its 8-22-90
 meeting.

CALENDAR ITEM

A)
) N/A
 S)

82

08/22/90
 C 9023
 W 3399
 W 30007
 Hall

DECLARATION OF A HAZARD TO INCLUDE
 IN THE COASTAL HAZARDS INVENTORY
 OIL SEEPAGE FROM OLD ABANDONED OIL WELLS
 LOCATED IN SUMMERLAND, SANTA BARBARA COUNTY

PARTY: State Lands Commission
 1807 13th Street
 Sacramento, California 95814

In 1898 there were 22 companies that were drilling for oil within the surf zone and up to 800 feet from the beach in Summerland, Santa Barbara County. Staff has documentation that identifies 165 wells which were drilled prior to 1907 at this location. The then technology for plugging and abandoning these wells to ensure that oil would not escape was very crude by today's standards. In 1968, the Legislature appropriated funds to cap the wells. SLC contracted for the capping of sixty abandoned wells by placing a 5 foot deep concrete plug in the well casing below the ocean floor. An evaluation of the plugs was not performed and there is evidence that the methodology may not be totally effective.

During the summer of 1989, staff obtained the service of Oceaneering International to identify which abandoned wells were seeping oil. Due to restricted visibility this effort did not provide conclusive results. In November of 1989, during an on-site presentation to the prospective contractors for the Beach Hazards Program, the staff was approached by concerned citizens regarding the worsening problem of oil on the Summerland Beach. From that point forward the SLC Santa Barbara staff has monitored the beach and has found that the problem appears to be increasing.

JUSTIFICATION TO INCLUDE THE SUMMERLAND HAZARD IN THE COMMISSION'S INVENTORY

The seeping oil from the old abandoned wells continues to coat the beach at Summerland causing a disruption to recreational activities and harm to the local environment. The wells are located from the surf zone out to 800 feet offshore and the seeping oil comes directly to the beach area rather than dissipating or evaporating. The frequency of higher levels of oil on the beach has concerned the local community and SLC has been approached to provide a solution to the problem.

The Commission's Mineral Resources staff has analyzed the problem and has sought an economical and effective means to cap these wells to stop the seeping oil from the abandoned wells. The estimated cost to cap the wells is \$500,000 per year over a three year period.

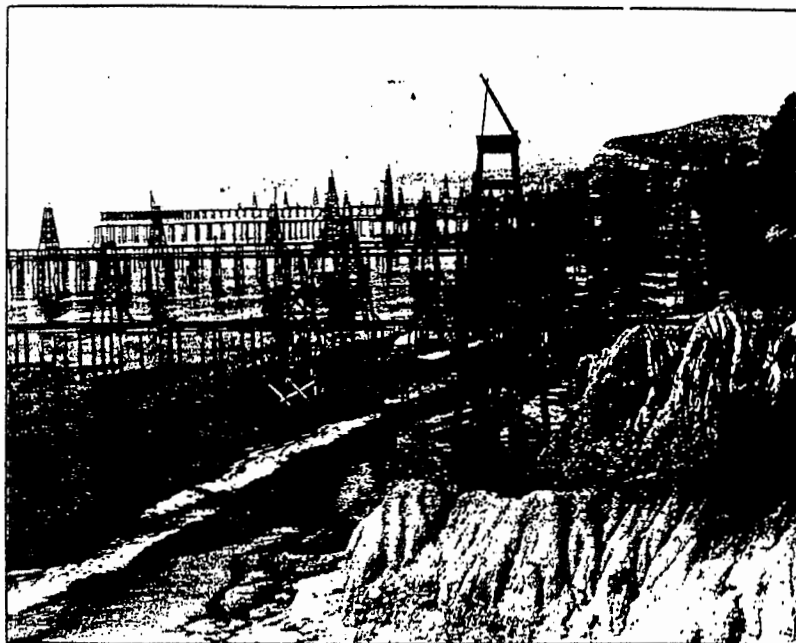
EXHIBITS: A. Santa Barbara newspaper articles.
 B. Summerland Beach site map.

IT IS RECOMMENDED THAT THE COMMISSION:

1. FIND THAT THE ACTIVITY IS EXEMPT FROM THE REQUIREMENTS OF THE CEQA PURSUANT TO 14 CAL. CODE REGS. 15061 BECAUSE THE ACTIVITY IS NOT A PROJECT AS DEFINED BY P.R.C. 21065 AND 14 CAL. CODE REGS. 15378.
2. FIND THAT THE HAZARD "ABANDONED OIL WELLS" LOCATED AT THE CITY OF SUMMERLAND, SANTA BARBARA COUNTY IS A HAZARD AS DEFINED BY THE COMMISSION'S CRITERIA CONTAINED IN THE 1986 HAZARDS INVENTORY REPORT.
3. AUTHORIZE THE EXECUTIVE OFFICER TO TRANSMIT A REQUEST TO THE JOINT LEGISLATIVE BUDGET COMMITTEE TO ADD THE HAZARD TO THE COMMISSION'S HAZARD INVENTORY .
4. AUTHORIZE THE EXECUTIVE OFFICER TO SOLICIT BIDS, AWARD AND EXECUTE THE CONTRACT TO THE LOWEST QUALIFIED BIDDER IN ACCORDANCE WITH STATE POLICIES AND PROCEDURES FOR THE CAPPING OF THE "ABANDONED WELLS AT SUMMERLAND".

EXHIBIT "A"

Sanjara County (Ca.) Star-Free Press AUG. 2, 1990



Officials say oil is seeping from some of the 165 abandoned wells, seen here in their production heyday, along the Summerland coast.

Oil, tar blobs darken Summerland beach

By Barry Bortnick
News-Press Staff Writer

Summerland's oil legacy of the early 1900s is returning with a vengeance as blobs of tar and oil appear on the beach. The sticky, gooey stuff is discouraging some local beach goers.

Later this month, the state Lands Commission will consider a recommendation declaring old oil wells along Summerland's shores an "extreme hazard." The commission, which regulates oil drilling within three miles of the coastline, also will debate spending

\$500,000 to cap several of those abandoned and leaking wells.

There was a time when the Summerland coastline had a view reminiscent of an Oklahoma oil field, as wells spread from the beach like a dark web.

In the early 1900s, there were no agencies looking out for shore and sea life. When a well went dry, it was not always capped with posterity in mind. Sometimes a telephone pole was shoved down the abandoned well to stem its flow. In other instances, a well was covered with stones.

Since those boom days, the waters off Summerland frequently have had an oily shine.

Although state experts say some of the current oil mess is created from natural seepage — similar to the leakage at Coal Oil Point near the UCSB campus — part of the blame comes from 165 wells left abandoned in 1907, said Charlie Powell, an oil official with the Lands Commission.

No matter what the source of the oil, its presence has tainted life in Summerland.

"We don't even go to the beach

anymore," said Sachi Kitoa, 14, of Summerland. "It is oily everywhere. It has been that way for years. It (the oil) gets all over my bathing suit. That is why I don't go there anymore."

The oil does more than cling to clothing, said Carpinteria resident Ron Waid, who often fishes from the beach at Lookout Park.

"Sometimes the oil is so thick on your (fishing) line that you have to replace it," Waid said, while examining an inflatable chair he uses to fish in. The chair had a ring of oily tar along its bottom.

"It's thick," Waid said of the oil. It also stinks, said Lookout Park lifeguard Roland Smith, as he viewed the floating oil slicks from his watchtower.

"When a wave goes out, the sand will be totally dry because it is saturated with oil," Smith said. "I do ocean swims, and I have to stop (when getting near Lookout Park) because you can taste it. It is rancid."

One of the abandoned, leaky wells is just a few steps from

See OIL, Page A 14

*Santa Barbara News Press
Front Page
8/1/90*

Oil

Continued from Page A 1

Smith's tower, and is clearly visible.

"Sometimes there is so much oil it is like hair," Smith said. "You can smell it and taste it."

Lookout Park Ranger Jack Finnegan, a 16-year resident of the beach town, said the oil "has put a real damper on the normal beach activity we have here. It is bad, it is unusually bad."

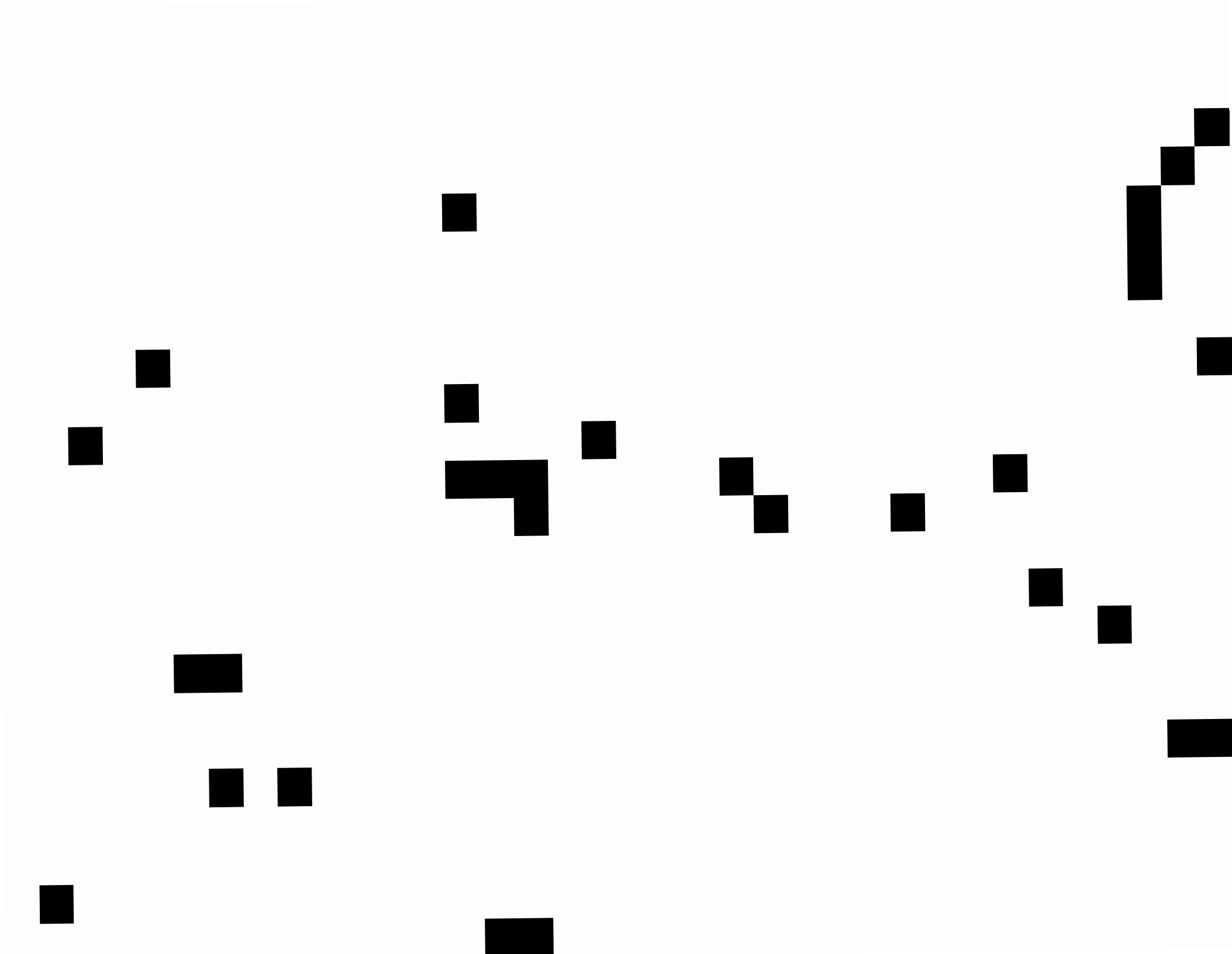
Ridding the area of small, floating oil slicks and tar balls will not be easy — or cheap.

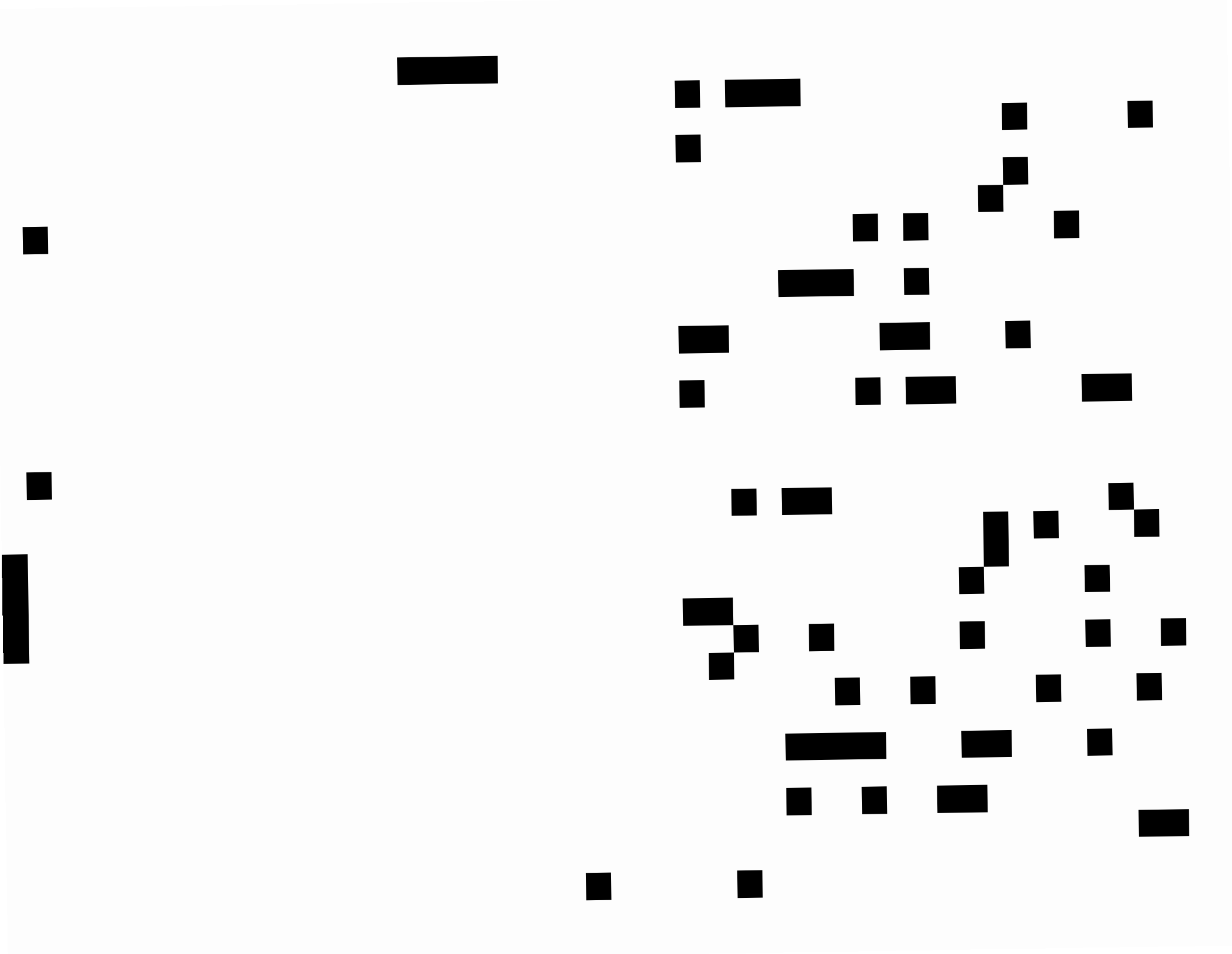
Carla Fritz, of Assemblyman Jack O'Connell's office, said Tuesday that an oil barge could be brought in from Alaska to help cap the wells, but the price would be high.

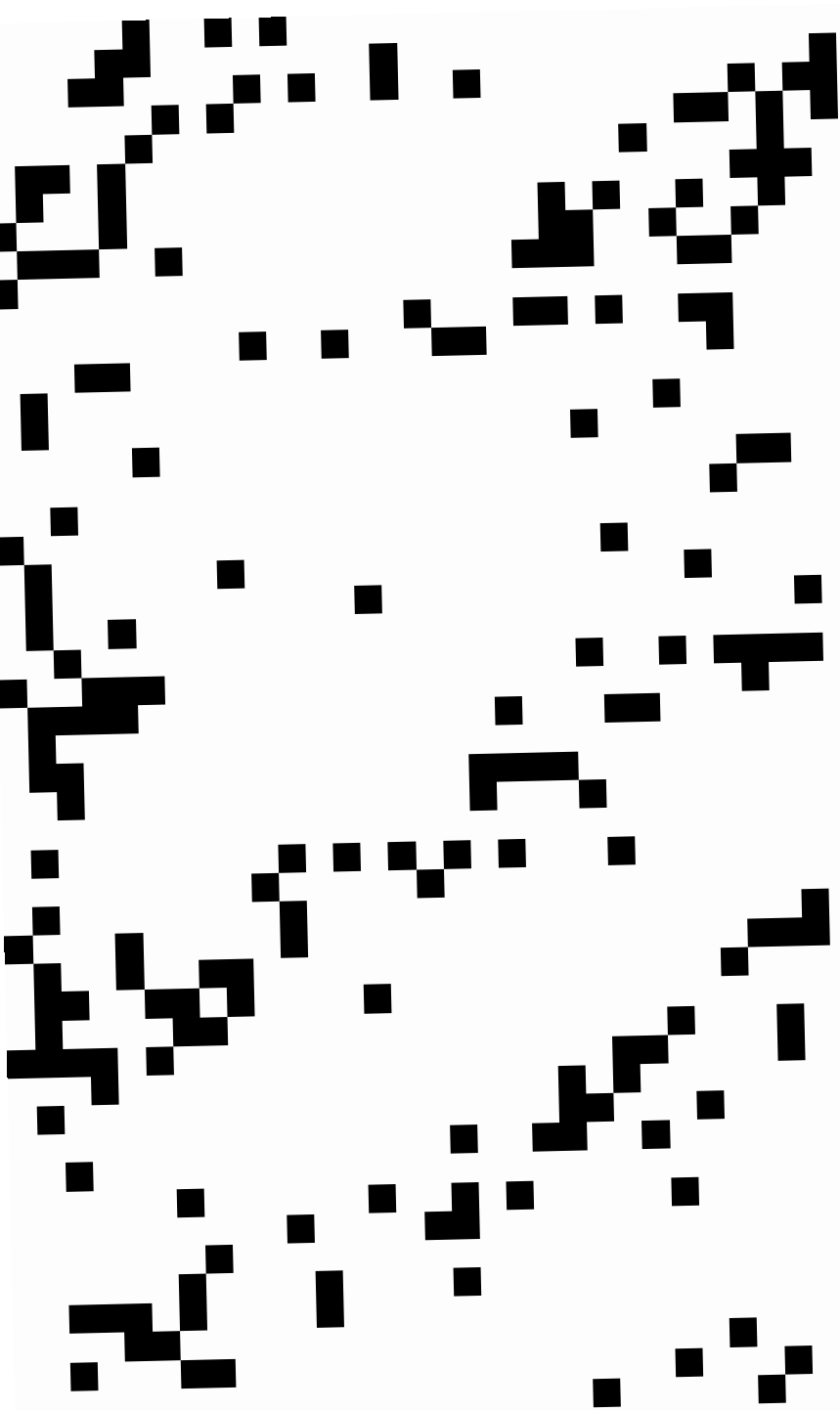
The barge, which costs \$100,000 a month to operate, may be the cheapest way of correcting the leaking wells, Fritz said.

"Those who use the beach want to see it fixed," Finnegan said. "The more people who make noise about it, the sooner it will be done."

Should the Lands Commission approve its staff's recommendations, clean up operations could begin in four months, according to Fritz.

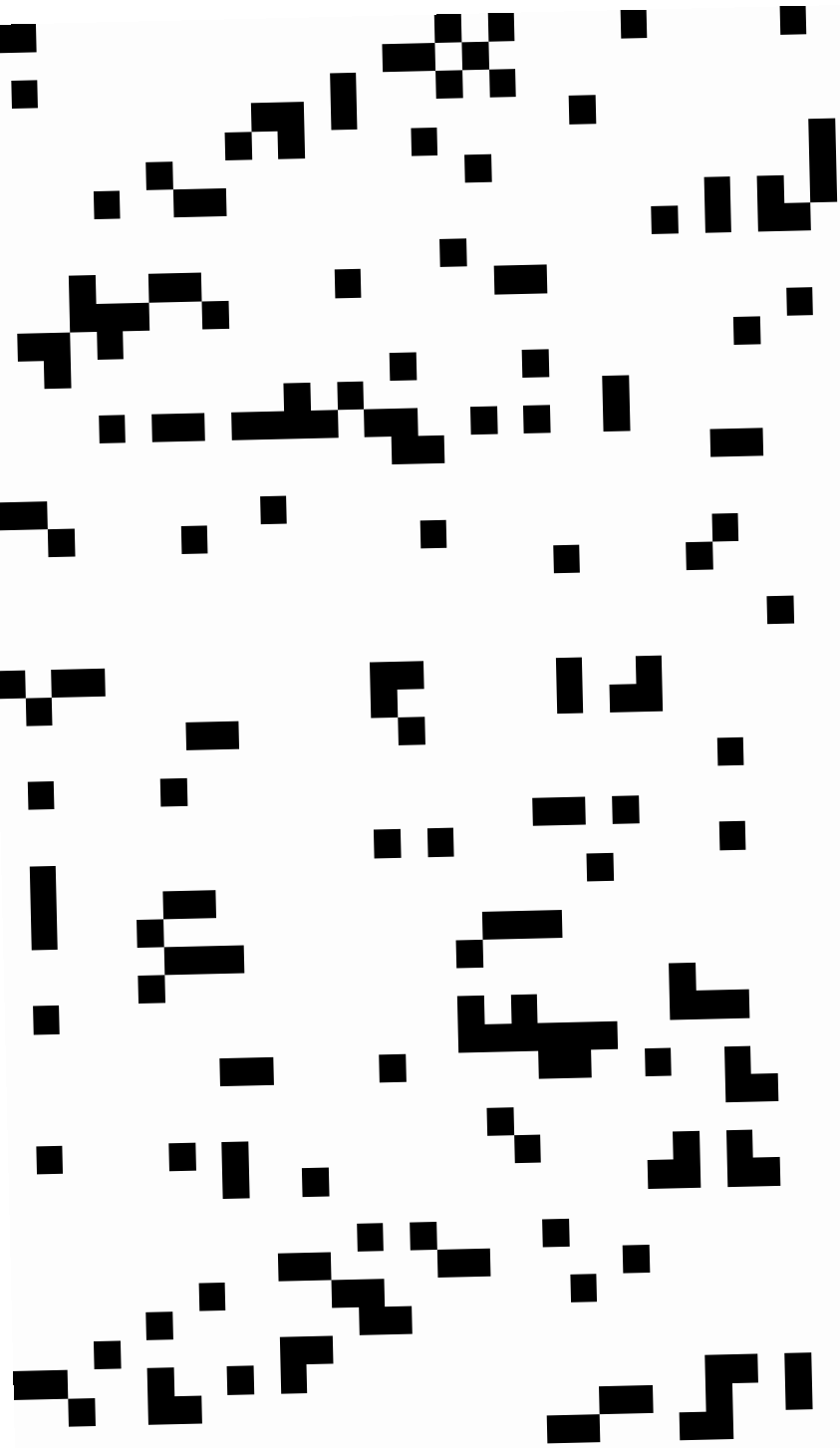




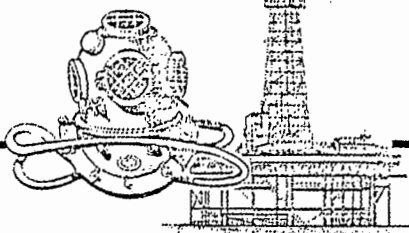


i





CAL DIVE



CALIFORNIA DIVERS INC.

P. O. BOX 4488 • SANTA BARBARA, CALIF.

14 August 1967

DAILY RECORD OF WORK PERFORMED

1. INITIAL INSPECTION OF SUMMERLAND WORK SITE - Saturday July 8, 1967, 2:00 P.M. - 5:30 P.M.

I entered the work area by the road below the County Park, and walked up in front of the breakwall at the north end of the work site. There were several exposed casings at the base of the breakwall, one having a string of tubing in it. I was able to pound an 18 inch screwdriver about 10 inches into the tubing string.

Upon walking south down the entire beach area, I was able to find only 3 well casings exposed, which will hereinafter be referred to as "A", "B" and "C". (All wells will be designated by an alphabetical letter which will correspond to the letters on the plastic overlay to the Lindbergh map.)

None of these wells are shown on the Lindbergh map. All three casings were seeping oil.

Using SCUBA gear, I swam out from the beach toward the Southerly most casing shown on the map as "EXPOSED AT ALL TIMES" (D). Approximately 100 ft. inside and 20 ft. to the North of this casing lies a submerged casing which is not shown on the Lindbergh map (E).



The casing protrudes about 5 feet above the existing sand level. At this point the casing was broken, the top section (15 to 20 ft. long) angled back into the sand bottom. The broken section of casing was held to the vertical casing by the tubing string, which was still intact though bent when the casing fell. The tubing string appeared to have an outside diameter of 5 inches. The outside diameter of the casing was 9 inches. The sand within a radius of 3 feet from the casing was found to be about 2 1/2 feet over bedrock. The water depth was 9 ft.

There was a considerable amount of thick black oil seeping from between the 8 inch casing and the tubing string. This seepage may be observed from the bluff at all times.

I then swam toward the "EXPOSED AT ALL TIMES" (F) casing on the Northerly end of the work area. While swimming on the bottom, I located two more casings (G) and (H) about 30 and 40 ft. respectively inshore from the "exposed" casing. These two casings are also either incorrectly located on the map (if one inch equals 50 ft.) or not shown at all. One of the casings was broken off about 6 feet below the surface of the water, the top section lying on the bottom, butted up against the vertical piece. Both casings were 9 inches OD. The sand depth above cobble was about 24 to 30 inches. One of the casings protruded from the sand about 4 or



DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

51 PACIFIC COAST HWY., SUITE 309-N
LONG BEACH, CALIFORNIA 90804



April 7, 1975

Mrs. George M. Sidenberg, Jr.
President
Carpinteria Valley Association
387 Lambert Road
Carpinteria, California 93013

Dear Mrs. Sidenberg:

Governor Brown has asked me to thank you for your letter of March 3, 1975, regarding oil seepage in the waters off the Summerland Beach area.

It has not yet been established that the oil seepage at Summerland is coming from old oil wells. If as a result of the investigation which is in progress, the seepage is found to be coming from old wells, they will be repaired.

Summerland offshore wells were drilled between 1896 and 1901 or 1902. During this period, and for some time after, oil wells throughout California were commonly drilled in the vicinity of natural oil seepage, and Summerland field was no exception; an old geologic map shows oil seeps onshore. A geologic review of the Summerland offshore area indicates that it is typical of a natural seep area. Sands containing oil crop out onshore and either crop out on the ocean floor or are covered by thin layers of permeable strata. Furthermore, two apparent faults trend southeasterly across this area and may serve as avenues for seepage.

At this time, there are two locations off Summerland with noticeable oil seepage. The eastern one is definitely outside the area of development wells and is, therefore, most probably the result of natural conditions. The western one is within the developed area but is also near the trace of a possible fault so seepage here may be from a well or from a natural seep.

A representative of the State Lands Division has been notified of the seepage. He has indicated contracts have been let to determine the source of the seeping oil and to make repairs if the seepage is from old wells.

No method has yet been developed for permanently shutting off the flow of oil from natural seeps, but I am sure that much of the oil, had it not been produced from those early wells, would have eventually seeped up through the strata and into the water.

Sincerely,

John L. Hardoin
John L. Hardoin
Offshore Officer

JLH:vaa

cc: Governor Edmund G. Brown Jr.

Lt. Governor Dymally

Senator Omer L. Rains

Assemblyman Gary K. Hart

DATE	APR 21 1975
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CPE	<i>[Signature]</i>
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3 DL	<i>[Signature]</i>
4 EEW	<i>[Signature]</i>
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FILE:	<i>W 33993</i>

3399:
\$9016

[Signature] XA

State of California
Memorandum

State Lands Commission

To : W. M. Thompson

Date : July 14, 1989

File No: W 3399

From: J. Wescott/J. Planck
STATE LANDS COMMISSION
245 West Broadway, Suite 425 - Long Beach, CA 90802

Telephone: ATSS
(213) 590-5201

Subject: Summerland Oil

Since Sunday, July 8, we have been aware of a new source of oil just outside of the surf zone (approximately 50 feet) in the Summerland area. The flow was fairly heavy on the 8th, 9th and 13th, and light and indistinguishable from the normal background oil (from natural seep activity) on the other days. The heavy flow and apparent sighting of the source on Thursday the 13th prompted us to request funding for a dive to locate, identify, and mark the source. Unfortunately funding was approved too late to dive on Thursday, and because of the ebbing of the oil flow and increase in surf activity by Friday morning, the dive was unsuccessful at locating the source.

Because of the intermittent and inconsistent nature of the flow we believe that current efforts to identify the source be curtailed until such time as the problem becomes more severe or at least more consistent. We will continue to monitor the situation by inspecting the beach daily. We will keep you informed of our effort.

cc: D.J. Everitts
P.V. Johnson
C.E. Powell
T. Bertoline

&+&C:

&+&C:

&+&C:

U.S. Department
of TransportationUnited States
Coast GuardMarine Safety Office Los Angeles-Long Beach
165 Pico Ave., Long Beach CA 90802**RECEIVED**

JUN 24 1994

STATE LANDS COMMISSION

JUNE 16, 1994 SUMMERLAND WELL ABATEMENT DISCUSSION

State Lands Commission presented information on the history of the oil production in the area. This included pictures and charts showing the extent of the production area. Most notable is that the vast majority of these wells were drilled and operated with no regulatory oversight. This non-regulation led to poor records and improper abandonment. SLC also indicated that it is true that the Santa Barbara channel is known for its heavy natural seep activity, however the Summerland area is an exception in that it is considered a light seep area. The project in '93 properly abandoned 3 wells and then financially fell short and was not able to complete the remaining 3 wells. Any work on the beach would have to be conducted between September and May due to the Ca. Coastal Commission's mandates.

Minerals Management Service supported SLC's historical brief and information on seeps. They also indicated that many of the wells were drilled through oil bearing sands and muds which present unique problems when abandoning wells. Many of the wells were not properly abandoned due to the storms which knocked out the piers supporting the well heads. There lies a potential that some wells are sealed with just the sediment on top of them. MMS offered their technical assistance to the Coast Guard.

County Parks reported that the heaviest year(s) for pollution was 1989-90. Mr. Finnegan has been the resident ranger at Summerland for the last 20 years. He indicated that the pollution releases are random and did not feel that the winter months produced any difference in releases. A unknown number of oiled birds have been taken for treatment over the last several of years. He has received several complaints from fisherman of oiling of gear. There is one seep or well which produces oil/sheen approx 50 yds off the shoreline.

IDS (contractor of '93 project) indicated that the rig could be operated in a depth of 15' of water. They also described the process of abandonment which requires the redrilling of the well and sealing with cement. The process includes sealing externally to the casing for about 100' down from the well head. IDS indicated that they could start the project this September.

The Office of Oil Spill Prevention and Response indicated that their fund could not pay for such an operation/response and that OSPR field officers have indicated that the SLC project of '93 is a significant decrease in overall pollution in the area.

Captain Page stated that the USCG would continue with their investigation and make a formal statement of intent on July 15, 1994. He also was clear that if the project was undertaken, only the three designated wells would be abandoned, however, if there are leaking wells which are discovered during the operation, the USCG would make the determination to abandon them at that time.

If you have any questions about the meeting or the USCG's investigation, please contact LTJG Mark Cunningham at 310-980-4450.

U.S. Department
of Transportation

United States
Coast Guard



Commanding Officer
U.S. Coast Guard
Marine Safety Office/Group
Los Angeles-Long Beach

165 N. Pico Avenue
Long Beach, CA 90802
Staff Symbol:
Phone: (310)980-4429

16450

24 FEB 95

From: Commanding Officer, MSO/Group Los Angeles-Long Beach, CA
To: Involved and Interested Parties

Subj: SUMMERLAND BEACH OIL WELL ABANDONMENT UPDATE

This letter provides an update on the Coast Guard's efforts to address the oil releases from improperly abandoned oil wells located off Summerland Beach. In my letter of 13 October, I informed you of my plans to conduct a detailed survey of the area in order to develop an appropriate response strategy. The survey, which included underwater videos of leaking natural seeps and wells, has been completed and the data reviewed by us along with representatives from the State Lands Commission and the survey contractor. I have concluded that proper abandonment of any of the identified wells off Summerland would be very costly and, unfortunately, would result in minimal or no net environmental benefit.

To obtain the best information possible, I entered into an agreement with Pacific Environmental Corporation (PENCO) to locate, examine, and accurately chart the positions of previous oil wells and any locations where oil was being released. Golder Associates and David Evans & Associates, companies with extensive experience doing similar work for the Army Corps of Engineers, were also employed to provide geophysical and hydrographic survey expertise.

The entire Summerland offshore area up to the high tide line was surveyed and mapped. Data collected included bathymetry to determine water depth and ocean floor contour, magnetic readings to locate buried oil well casings, and subbottom profiler data to define the sand coverage over buried well casings. Side scan sonar was also employed to locate well casings, rock formations and debris. Diver surveys were subsequently conducted to confirm the initial instrument analysis and to further delineate onsite conditions. Specific locations were targeted for additional investigation and several areas were excavated to verify the condition of well casings and to assess the possibility of natural seeps. The divers were equipped with head mounted cameras and obtained video documentation of problematic wellhead leakage and natural oil seep areas.

The survey revealed that, presently, the light sheening common to the Summerland waters is primarily from natural seeps, not abandoned oil wells. The large majority of the targeted release sites were found to be associated with natural oil seeps rather than abandoned oil wells. This seepage was limited to small droplets of oil periodically rising to the surface. However, during the survey we did noticed a significant increase in oil leakage after the seismic activity of 11 December. Also during

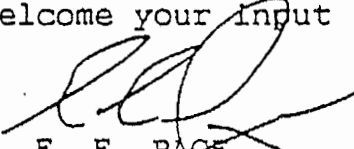
Subj: SUMMERLAND BEACH OIL WELL ABANDONMENT UPDATE (cont'd)

an extreme low tide following this seismic activity, oil accumulated in a small area within the tidal zone. Excavation revealed a low pressure release of crude oil in the vicinity of an oil well casing. The proximity to the shore makes this oil seepage visually more disturbing at very low tides. While the infrequent and minor nature of this release does not justify the costly and intrusive use of a work-over rig to properly abandon this well, we are exploring the feasibility of less disruptive capping measures to stop leakage from within this casing. Because tidal conditions acceptable to such work will not occur until May, we have the opportunity over the next several months to better define the frequency and the actual amount of oil being released at this particular location.

To help determine the environmental impacts presented by the episodic oil releases off Summerland, I consulted with the NOAA Scientific Support Coordinator. We observed that a majority of the oil evaporates or quickly disperses due to wind, wave and surf action. Although two endangered species, the brown pelican and the clapper rail, periodically use this habitat, there has been no indication they have been impacted by released oil. In addition, giant kelp, the predominant plant species in the near shore environment, is not particularly sensitive to oiling. These facts, coupled with the knowledge that the Summerland area has numerous, active natural seeps has convinced me the amount of oil coming from the abandoned wells does not pose a serious environmental threat.

Since we became actively involved in monitoring the Summerland Beach area in April of 1994, there has not been any documented beach impact from offshore oil releases. Many local residents and visitors to the beach have been queried about the history of oil releases and none could recount any beach impact since the State Lands Commission properly abandoned several problematic wells in 1991. Nevertheless, I directed eight offshore locations to be marked with buoys as a quick way to correlate future oil sheen reports to any of the known oil release sources identified by this survey. We also intend to stay in touch with the local park ranger and other interested parties in order to stay abreast of the situation and will take appropriate action as the situation dictates.

The information obtained by this survey provided us with a better understanding of the oil sources in the Summerland area and will be helpful in determining future actions should conditions worsen. As in the past, I welcome your input and opinions.


E. E. PAGE
Captain, U. S. Coast Guard
Federal On Scene Coordinator

Dist: See attached Summerland Well Research Project Reference #12

Subj: SUMMERLAND BEACH OIL WELL ABANDONMENT UPDATE (cont'd)

Dist: CCGD11(m)(d1)

USCG NPFC

Rob Townsend, USCG MLC PAC(fcp)

LCDR Morris, NOAA SSC

CDR Jascott, USCG Congressional Affairs

James Galloway, U.S. DOI Minerals Management Service

Robert Hight, CA State Lands Commission, Sacramento

- Greg Scott, CA SLC, Mineral Resources Division, Long Beach

Pete Bontadelli, CA Oil Spill Prevention and Response

CAPT Joe Pecs, CA Oil Spill Prevention and Response

- Sue Martin, Santa Barbara County, Energy Division

Jack Finnegan, Santa Barbara County Parks

- Barrie Todd, U.S. Fish and Wildlife Service

Office of Senator Feinstein

Office of Senator Boxer

Carla Frisk, Assemblyman O'Connell's Office

Tom Ulrich, PENCO

Memorandum

To : D. J. Everitts *[Signature]*
Supervising Mineral Resources Engineer

Date : August 8, 1967

File No.: W.O. 3399

② AWP *[Signature]*

③ FJH *[Signature]*

[Signature]
[Signature]

From : State Lands Division

Room 305 California State Building—217 West First Street, Los Angeles, California 90012

Subject: Summerland Beach Clearance Project, Preliminary Study No. 1.

This is in reference to the preliminary study by Calif. Divers, Inc., for the removal of obstructions located on tide and submerged lands offshore Summerland, California.

Conclusions:

1. At least 2 strings of casings can safely and effectively be cut with an internal or external explosive.
2. Air jetting equipment is an effective method of cleaning sand, gravel and some cobble size rocks from the well bore to depths of at least 25 feet.
3. An internal cut is preferred where it is possible to enter the well bore and place a cement plug.
4. Re-entry into wells after explosive cuts will be very difficult (especially offshore). Therefore, external cuts should be used with caution and only on wells which are plugged solidly with cement.

Discussion:

Three wells were selected for this preliminary study; two wells located on the beach and one offshore in approximately 8 feet of water. These wells are located on the west end of the project area (see attached map).

The two wells located on the beach have an outer 8-inch string and a 6-inch production string of casing present. There was no cement present in either of the two wells to a depth of 25 feet below the top of the 6-inch casings. They were cleaned out to this depth with air jetting equipment. Oil saturated sand and gravel were encountered in both of the wells. The jetting equipment consisted of 1/4-inch pipe made up in 6-foot lengths and coupled with rubber hose to compressed air tanks. The air jet was an effective means of removing sand and gravel from the wells. Inasmuch as the wells were cleaned out several days before the day selected for shooting off the wells, a one-foot plug was placed in each well at the 25-foot level. Cementing operations consisted of tamping a burlap and paper bag into each well and dumping neat slurry cement with 2% bentonite added through a 3-inch diameter plastic pipe run to the bottom of the cleaned out wells.

On August 4, 1967, the two wells on the beach were re-entered and jetted clean to the cement plugs at the depth of 24 feet. A small amount of oil was jetted out of Well No. 2 indicating that the one-foot plug was not completely effective. However, probing with the plastic cementing pipe indicated the plug to be in place, and firm. The wells were filled through the plastic cementing pipe with neat slurry cement, with 2% bentonite added, to within 6 feet of the top of the casings (approximately $2\frac{1}{2}$ sacks were used for each well). Several sand depth probes were made around each well in order to determine the depth of the cobble or rocky surface observed to be the low beach level in this area. The surface appeared to be $2\frac{1}{2}$ -3 feet below the existing sand surface at the well locations.

The explosive was lowered into the well immediately after each cementing operation. The Explosives Engineering Corp. was subcontracted to provide men and material for all explosive work. The explosive used was a liquid blasting agent developed by Explosives Engineering Corp. and known commercially as Triex. This explosive is extremely safe in handling and transporting, and consists of two major compounds which are not classified as Class "A" explosives until they are mixed. Therefore, they may be transported and mixed at the job site with minimum risk.

*casing was
"8" below
sand surface*

In Well No. 1, the explosive ($2\frac{1}{2}$ lbs.) was hung at 5 feet below the top of the casing. Several wet mattresses, carpeting and sand bags were placed over the well to reduce the "cannon" effect of the shot. The upper section of the casing was in such poor condition that it was completely destroyed. The largest fragment found was $1\frac{1}{2}$ feet by 6 inches. An attempt was made to dig down and locate the top of the well; however, the water table prevented this operation from being very successful (see attached photos). We did, however, observe what appeared to be one edge of the severed casing.

↓

Well No. 2 was shot off at 6 feet below the casing top with $2\frac{1}{2}$ lbs. of explosive. The casing of this well was in much better condition and did not disintegrate; however, the retrieval of the upper section was very difficult and a winch truck was finally required to effect its removal (photos attached). No attempt was made to locate the top of the casing.

*In 8'±
of water*

The offshore well selected for this study had a 6-inch string of badly deteriorated casing protruding approximately 5 feet above the sand surface, and an outer 8-inch string extending about 2 feet above the sand. The well was plugged solidly with cement. A small portable frame-work was erected over the well and an attempt was made to drill out the cement plug with a hand-operated compressed air drill. During the operation the drill steel became lodged and could not be recovered. It was decided to make an external cut with explosives. Sand was air jetted from around the well to a depth $2\frac{1}{2}$ feet below the existing sand surface. Cobbles and large rocks were encountered at this depth. A portable compressor with a long supply line was used to operate the air jet offshore. Four pounds of explosive was made up in tubular plastic bags and wrapped around the bottom of the casing.

D. J. Everitts
Supervising Miner

The casing was bl.
appeared to be st
to the site with
severed casing; h
tract. Therefore
inasmuch as its r

*This looks like a good start.
Agree that we should deter-
mine whether the remaining
~~the~~ casing stub is plugged and
if it is not, require placement.
Also in our next study try
to cut the inner string of
the severed stub - may be
with a torch so that both
strings can be plugged.*

ADW:hw
Attachment: Map
Photos

Camp

Note: An observer from the Department of Fish and Game and representatives from the Division of Industrial Safety were present during the explosive work. There were no fish killed with the offshore shot.

Additional comments: Survey work done in conjunction w/ Cadastral indicates that work done by Lindbergh is not within the accuracy specified in that contract. Maps prepared will be useful only to a limited degree. C. Robertson is preparing memo.

Where dual strings of casing occur it is not possible to place cement between the strings but only within the inner string. If cut-off shots should split the inner casing below the cement plug, leakage may occur between strings.

Contractor will submit written report 8/15/67 pursuant to signed agreement.

No attempt was made to locate top of casing on offshore well after shooting. It is not known if there was cement in the casing at that depth.

Second study contract should attempt to relocate this well to determine if cement is in place at cut-off point. Cement should be placed if not. Second contract should concentrate on underwater obstacles inasmuch as beach obstructions seem to offer no problem.

[illegible]

DATE BY C I L

SECRET IN THIS AREA
SETTLE IN ORDER 1/8
SETTLE IN ORDER 1/8

Summerland Well Research Project Reference #13

No. 3

Not shown on
Windsor map

BASE OF BLUFF

CONCRETE ALCA

10424
DAILY COPY INLAND & TUES
DAY IN BOSTON OF ARROW

100

1

Figure 1. Effect of the concentration of the inhibitor on the rate of polymerization of the monomer.

المجلس الأعلى للدراسات والبحوث

1998

14

23

639

20

1997

100

13

11

45

Memorandum

To : Mr. D. J. Everitts *DE*
Supervising Mineral
Resources Engineer

Date : September 19, 1967

File No.: W.O. 3399

② AWP *cut*

From : State Lands Division
Room 305 California State Building—217 West First Street, Los Angeles, California 90012

Subject: Summerland Beach Clearance Project, Preliminary Study No. 2

This is in reference to the preliminary study by International Divers, Inc. for the removal of obstructions located on tide and submerged lands offshore Summerland, California.

On September 11, 1967, a survey was made of the area in order to locate several casings and evaluate the men and equipment necessary to effect their removal. Three casings were located and marked with buoys. The casing locations are shown on the attached map and designated "A", "B" and "C". All three casings appeared to be single strings of 10-inch diameter casing with no cement present. No oil or gas seepage was observed from any of the casings. Casing "A" has 18 feet projecting from the ocean floor at ~~an~~ approximately a 30° angle with the ocean floor. This well is in approximately 12 feet of water. Casing "B" has 6 feet of casing exposed and is also bent over forming a 30° angle with the ocean floor. The water depth at this location is 8 feet. Casing "C" is in a group of casings projecting from the ocean floor from one to four feet. They are all in a vertical position and in 6 feet of water. This location is marked by a large cluster of seaweed and is easily located. The work performed on September 11, 1967, utilized 2 divers and diving gear, a boat operator and an 18-foot boat.

On September 18³, 1967, a 65-foot salvage boat was contracted to transport men and equipment to the Summerland area. A water jet pump, cement mixer, and grouting pump were loaded on the stern of the boat. Casing "A" was selected for the initial work because of its location at the seaward boundary of known well casings (water depth 12 feet). The unmarked location of the submerged casings makes maneuvering a boat within this area very precarious. Inasmuch as the casing was bent over, it was determined to make two cuts; one slightly above the ocean floor so that the well could be cleaned out and plugged and the other cut at the cobble surface, 4 feet below the ocean floor. A diver using "hard hat" diving equipment to provide communications, excavated the sand from around the casing to a depth of 2½ feet. An exterior cut, using 7 lbs. of liquid Triex explosive, was made at the ocean floor level. The Explosive Engineering Corporation was subcontracted for the explosive work (this is the same company that was used in the first study). The 10-inch


single string of casing was severed completely; however, the exterior cut pinched the casing and another small shot was necessary to flare the upper portion of the casing. The casing was then cleaned out with the water jet to a depth of approximately 12 feet. No cement was encountered and no oil or gas seepage was observed. Several cement sacks were tamped into the well and neat slurry cement was pumped into the well and filled to a depth of 4 feet (10 sacks of cement were used; however, considerable waste was experienced in the mixing operation; only 4 sacks were required for the calculated volume). Four pounds of explosive were hung in the casing at 4 feet below the ocean floor. The casing was completely severed and the top was located at the bottom of the 4-foot crater formed by explosion.

The large section (18 feet) of casing cut with the first shot was manually hauled to the surface for inspection. The casing was encrusted with marine growth with the exception of the end which had been near the explosive. The steel appeared to be in fair condition; however, close inspection of a small fragment returned to the office indicated a highly laminated nature of the steel. The debris was hauled approximately 100 feet to the well casing exposed at all times (see map) and dropped for ultimate disposal under the major contract. Time did not permit any additional work.

Mr. Peter Blommers of International Divers indicated that the work performed was at considerable more expense than the \$1000 contract and asked that I inquire if it would be possible that their actual costs be paid. A report of their findings and complete invoice of costs will be submitted shortly. Although their work was entirely satisfactory and efficiently performed, I feel that if such an adjustment is considered, an adjustment should also be made to the contractor of preliminary study No. 1. Their invoice of actual expense was \$452.75 over the contract price.

More fish were killed (200-300, generally small, less than 6 inches) during this study; however, the Fish and Game representative indicated that inasmuch as they were not of the game fish variety, they would not limit the use of explosives in the area.

It appears that the word has gotten around that the \$1000 contract does not cover the costs of setting up the equipment necessary for the preliminary studies and the proposed third contract is still open. I have contacted five companies, all of whom indicated an interest in the large contract but could not afford to sustain a loss in a preliminary study without the assurance of the major contract.


A. D. WILLARD
Associate Mineral
Resources Engineer

ADW:jd
Attachment: Map



Mr. D. J. Everitts, Manager
Energy and Mineral Resources Development

July 21, 1975

W 3399 |
W 3579

Removal of Hazardous Conditions - Summerland and Ellwood Areas.

SUMMERLAND:

Prior to the first State Mineral Leasing Act in 1921, a small oil field was developed on tide and submerged lands and the adjacent uplands at Summerland. The operators apparently deserted these operations when they became uneconomic and the piers were eventually destroyed by the sea and storms. There is a small park on the bluff overlooking this area and the public has free access to the beach. The remaining well casings and pilings, now generally corroded to a point below the low tide line, presented a hazardous condition for those attempting to use about a mile of beach and adjacent waters.

Because there are no records identifying these obstructions and their original owners, the State Legislature was asked for funds in the mid-fifties for clean-up work. With a \$25,000 appropriation in the 1956-57 fiscal year, the first major attempt was made to remove the obstructions from the beach area. Records indicate that about a half mile of beach was cleaned at that time with these funds.

In 1960, \$1,900 was expended for preparation of a map of the beach and adjacent waters, showing all well casings and pilings which could be located in an area extending eastward for about 5000 feet from a seawall just west of the County Park. Ninety obstructions were plotted.

Additional well casings and pilings were removed in late 1968 under a 1966 legislative appropriation of \$53,400. Sixty-two units were removed at this time, leaving at least twenty-eight remaining, based on the 1960 survey. It is believed that several removed in 1968 were not shown on the map. There are natural oil seeps in this area and oil and/or gas seeping from a few of the old casings complicates their removal since it is more difficult to get an effective plug in the casing strings.

In 1969 the Legislature appropriated \$50,000 for additional beach cleanup at Summerland. Because of Division priorities, the staff was unable to obtain a qualified bid and complete the project within the three-year time limit on use of such funds. To continue the availability of these funds, they were transferred to the Architectural Revolving Fund on October 25, 1972. Architecture does charge 2%, however, for their services in handling projects.

The Office of Architecture and Construction advertised for bids on the project for removal of about 28 well heads and other obstructions in December 1972, and readvertised in December 1973, but was unable to get a qualified bid within the limits of available funds. The project, modified to reduce the anticipated volume of work, was readvertised in December 1974. The two bids received ranged from \$70,000 to \$120,000, again well above the available funds. One contractor had a bid prepared for less than \$50,000; however, he mistakenly brought it to our Long Beach office at the time bids were to be opened, instead of Architecture's Los Angeles office.

In March of this year, Architecture awarded Griswold Construction Company a contract for \$43,780 to complete the cleanup at Summerland. This contractor removed three well heads and some other obstructions on the beach at Summerland, and has just completed capping a leaking well offshore. He will now attempt to determine the source of an oil stream which is appearing further offshore in this area. All known well heads have been removed, and over 75% of the funds are expended.

ELLWOOD:

In the early thirties, at least 15 piers were constructed along the coast near Ellwood oil field. These piers ranged in length from a few hundred feet on the east to 2500 feet toward the west side of the developed area.

Sand erosion following removal of all but the most westerly of the long drilling piers resulted in the exposure of hazardous obstructions on the beach and in the surf. Pilings, pipe, and caissons from former oil operations, reportedly removed to a point at least six feet below the existing sand line as these facilities were abandoned, later were exposed. Work was completed in the mid-fifties. Field inspections at that time indicated that the work was properly done, and all cleanup bonds were released with the exception of the Sun Oil Company, which did not apply at that time. Sun Oil did additional work in recent years in the area on which they had piers, and their bond was released early in 1974 following an inspection while work was being completed.

In 1972 the Embarcadero Municipal Improvement District requested cleanup of the Ellwood beach area. The uplands in this area are undeveloped private beach lands, except for a golf club. However, surfers and bathers use the beach both with permission and by trespass. The district was informed that funds would have to be provided by the Legislature. Assemblyman McGillivray carried the bill for them, and in 1973 the Legislature appropriated \$75,000 for beach cleanup at Ellwood. The Division contracted with the Division of Forestry to use Ecology Corps workers in the spring of 1974 for removal of hazardous obstructions on the beach. The cost was low, only \$7,130, and the work was limited to hand labor supported by a cutting torch and a well worn bulldozer. An appreciable amount of junk was removed from the beach; however, the crew was not equipped to work in the surf. Piling and possibly other obstructions remain in the area, some of which are visible at low tide.

Mr. D. J. Everitts

-3-

July 21, 1975

Early this year a contract was prepared for the offshore piling removal similar to the Summerland contract. It was hoped that the same contractor that worked for Architecture might do this work. It is now evident that this contract should be rewritten to obtain better performance with the available funds. Specifications for an onshore contract have been sent to our legal counsel for review (this date). This contract would provide for a bulldozer, skip loader, and truck, as required, to work on the beach as obstructions are exposed.

D. A. LAMMERS
Petroleum Reservoir Engineer

DAL:ed

2K1

Memorandum

To : Mr. D. J. Everitts, Manager
Energy and Mineral
Resources Development

VIA: Mr. L. C. Smith, Petroleum Drilling Engineer
and
Mr. C. F. Eaton
Supervising Mineral Resources Engineer

From : STATE LANDS DIVISION
100 Oceangate, Suite 300 — Long Beach, CA 90802

Subject: Summerland Cleanup-- Abandonment of Old Wells

8/6/76
DJE
CFE
ADW
FILE

Date: August 5, 1976

File No.: W 3399

Refer to attached letter from Santa Barbara County, Petroleum Administrator dated January 18, 1974 and Goleta Newspaper Article dated August 28, 1974.

The five wells referred to are the follow:

Williams #1, 2A, 3

Becker Fee #2

Unidentified well (no records, casing protruding out of bluff at County Park).

As per a telephone conversation with Joe Green, Petroleum Administrator, Santa Barbara County, concerning the five subject wells in Summerland the following statements were discussed:

Santa Barbara County asked for bids to abandon the five subject wells. ALCO has completed the abandonment of Williams #1, 2A and 3A wells. The county is proceeding with the abandonment of Becker Fee #2 and the unidentified well and expects the work to be completed by the end of August 1976.

A Mr. Juntz, owner of the property at Becker Fee #2 is pressing threat litigation. The court action has interrupted abandonment of Becker Fee #2 and the unidentified well but Santa Barbara County is now going to proceed to complete the abandonment of the two wells although the suit action has not been settled.

As per conversation with Don Lammers, SLD, it appears that the three tidelands wells, referred to in the letter are the ones that were capped in the summer of 1975, under a contract with Griswold Construction Company. This contract was awarded in March 1975 by the Office of Architecture and Construction. This contractor removed three wellheads and some other obstructions on the beach at Summerland; and capped a leaking well offshore. All known wellheads in the State Tidelands have been removed in the Summerland area.

William Falconer

WILLIAM FALCONER
Assistant Petroleum
Production Inspector

WF:lm

Summerland Well Research Project Reference #16

STATE LANDS COMMISSION
100 OceanGate - suite 00
Long Beach, Ca. 90802

01-16-81

January 16, 1981

Re: CONTRACT # 8067 on 12/5/80

File # W-3399 and W-4284.3 SUMMERLAND CALIF.
LOCATE OFFSHORE OIL SEEPS AND ATTEMPT TO CONTAIN SEEPAGE.

Dec. 18, 1980 Inspected the oil seep area Treadwell #10 found what appeared to be a well casing. After air jetting 12 to 14 inches, which uncovered a section of 6" casing bent 90 degree horizontally 15 to 18" long coming out of a 10" casing, which had been previously cemented. The visibility was poor with a surge situation and was unable to see any oil seepage from that casing.

We moved on to Treadwell #17 water depth 20 to 23 ft., well-casing approx. 10' off bottom. This well had a double casing 13 to 14" and ~~taxxaxoutxtox12x~~ swedged at the top to 10" at the same elevation with the inner 8". The debris was up to 5" in the casing. By the use of air jetting and hand scraper it was cleaned down to 30 inches and at the top of a previous cement plug. We made up our cement tremie equipment and made 2 attempts to make a cement plug, but the surge situation hampered the operation and bent our 3" tremie pipe.

Freckman seep #1 is in about 30 feet of water, seepage appears to be coming from the formation in about a 15 foot radius with several 1 inch dia. size craters, seepage was an occasional oil and gas bubble mix. It may be possible that a well-casing is in that area a few feet or inches below the sand that might be exposed with the air lift method.

Dec. 19, 1980 The well-casing was cleaned out again with scraper and air jetting down to 15" of yesterday's cement plug that was set. Ocean conditions were more favorable today and our tremie cement job was good and covered top of casing with a cement bag and wired it to prevent any surging from washing out any cement. Observed underwater for 15 minutes and found no sign of oil or gas seepage from that well casing or at the base in that area.

Treadwell #10 area was clear today no surging and was able to track oil seepage. Oil and gas seepage coming from outside of caisson offshore side. That caisson was set by Ed Griswold, it was 6 ft. diameter by 5 ft. that well-casing ID in 1975 was well # 4. Griswold worked approx. 28 days on that site, air lifting sand and material, jack-hammer and dismantled caisson made by welding two 55 gal. drums together over the casing and cemented it. (probably by Cal Dive). Griswold burned off the top 3 ft. section of the casing. Using the DUK we set and sank the 6 ft. dia. caisson, centered it over well-casing using air lift and water jet so the top of caisson was level with the natural sand bottom. Cement was pumped from shore, used 3 yards of grout with 15' sand. We were confident and optimistic that this method would contain the oil seepage.

For the period of December 18, 19, 1980 for \$ 900.00 per day.

(CONTRACT #8067) TOTAL AMOUNT DUE PETER BRUNIS-----\$1,800.00

4008 Foothill Rd.

11/16/81 Santa Barbara, Ca. 93110

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS
AND GEOTHERMAL RESOURCES

No. T293-201

REPORT ON OPERATIONS

Charlie Powell
STATE LANDS COMMISSION
200 Oceangate 12th Floor
Long Beach, CA 90802

Ventura, California
August 13, 1993

Your operations at well #10, API No. 283-20310,
Sec. 22, T. 4N, R. 26W, S.B.B.&M. Summerland Offshore Field, in Santa Barbara
County, were witnessed on 6-2-93. P. Wygle, representative of
the supervisor, was present from 1730 to 1830. There were also present
R. Glass, Contract Foreman.

Present condition of well: 20" ld 18'; 10' ld ?'; 8 5/8" ld ?, perf
143-147'. TD unknown. Plugged w/ cement 244'-5'.

The operations were performed for the purpose of abandonment.

DECISION:

The plugging operations as witnessed and reported are approved.

tkc

WILLIAM F. GUERARD, Jr.
Acting State Oil and Gas Supervisor

By Patrick J. Kinnear
Patrick J. Kinnear
Deputy Supervisor

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS

REPORT OF WELL PLUGGING AND ABANDONMENT

Ventura, California

August 13, 1993

Charlie Powell
State Lands Commission
200 Oceangate 12th Floor
Long Beach, CA. 90802

Your report of the plugging and abandonment of well Number 11

A.P.I. No. 283-20309, Section 22, T. 4N, R. 26W, SB B. & M.,

Summerland field, Santa Barbara County,

dated August 6, 1993, received August 10, 1993, has been examined

in conjunction with operations witnessed and records filed in this office. We have determined that all

of the requirements of this Division have not been fulfilled for the following reasons:

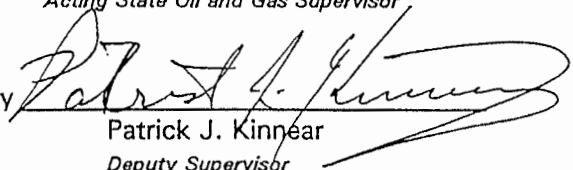
1. Unable to cleanout hole below 200'.
2. Unable to fill hole with cement or mud from 200' to 5'.
3. Unable to place a cavity shot at 200'.

cc: Conservation Committee
Update

William F. Guerard, Jr

Acting State Oil and Gas Supervisor

By


Patrick J. Kinnear
Deputy Supervisor

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS
AND GEOTHERMAL RESOURCES

No. T293-130

REPORT ON OPERATIONS

Charlie Powell
STATE LANDS COMMISSION
245 W. Broadway, Ste. 245
Long Beach, CA 90802

Ventura, California
June 15, 1993

Your operations at well "# 13", API No. 283-20305, Sec. 22, T. 4N, R. 26W, S.B.B. & M. Summerland Offshore Field, in Santa Barbara County, were witnessed on 6-1-93. Pete Wygle, representative of the supervisor, was present from 1700 to 2200. There were also present Lou Zylstra, IDS. Charlie Powell, SLC. Johnny Chatagnier, Frugr-McClelland.

Present condition of well: 8" (ID), perf @ 100'. Plugged w/cem 146'-5'.

The operations were performed for the purpose of abandonment.

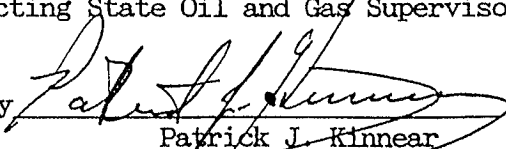
DECISION:

The plugging operations as witnessed and reported are approved.

PK:PW:nr

WILLIAM F. GUERARD, Jr.
Acting State Oil and Gas Supervisor

By


Patrick J. Kinnear
Deputy Supervisor

OG109



MEMORANDUM

: Greg Scott

Date : March 16, 1995

File No: W 9579.1

From : Steve Curran *sm*
Mineral Resources Management Division
State Lands Commission
200 Oceangate, 12th Floor
Long Beach, CA 90802

Telephone: ATSS 635-5201
(310) 590-5201

California Relay Service
TDD/TT (800) 735-2929
VOICE (800) 735-2922

Subject: Summerland Oil Well Abandonments - Re-evaluation

The following memo will outline the progress made and current status of the ongoing re-evaluation of the Summerland area in Santa Barbara county. During May 1994, the State Lands Commission, OSPR, U.S. Senator Diane Feinstein and State Assemblyman Jack O'Connell requested the Coast Guard to secure Oil Spill Liability Trust Fund (OSLTF) funds to abandon the remaining three wells in an attempt to stop suspected oil leakage into the nearshore waters off Summerland Beach. A meeting was held on June 16, 1994, to discuss the history, present conditions and the 1993 project information for the Summerland area. On July 15th a declaration of intent was made by the Coast Guard to abandon the improperly capped wells off Summerland Beach. The work was to start in September with the OSTLF opened for funds of \$850,000. Two bids were received as of September 27th to abandon three onshore and two inshore wells based on a time and materials basis.

An offshore and diving services contractor, Pacific Environmental (PENCO) was chosen to locate and conduct under water examination of the offshore wells. The project consisted of two phases as follows: Phase 1 - Initial survey with charting and mapping of the data to immediately follow. Phase 2 - Diving operations to verify survey results and further investigate potential well candidates and other possible hazards.

PHASE 1

Golder and Associates and David Evans and Associates were subcontracted to complete the Geophysical/Hydrographic survey. The offshore area was mapped to the high tide line and a land survey was run at low tide to overlap the offshore survey and tie the two surveys together. The offshore survey consisted of bathymetry data to determine water depth, magnetometer readings to locate metal hazards and old well casings rising above the bottom sand and a sub-bottom profiler run to determine the depth of sand coverage in the offshore area. A survey map of the Summerland area was developed describing the old oil well casings, oil seeps and wharf/pier piling type hazards.

A meeting was held December 2, 1994 with USCG, PENCO, Golder and SLC to discuss preliminary survey results. Forty three potential target areas were identified for further investigation. Many of the targets are pier pilings wrapped in tin, discarded pipe or cut-off oil well casings from previous abandonments. Approximately eight wharfs were located by the magnetic anomalies and appear to be offset thirty five feet west from earlier mapping of the wharfs.

The ocean floor appears to be made up of coarse grained to cobble sized sediments with a superficial sand layer of one foot or less except in the surf zone/beach area where sand coverage ranges from four to six feet. The survey also indicated bedrock exposed in several areas and other areas where the sedimentary formations were dipping as much as 40 to 60 degrees. Spots where sheening was occurring were also targeted by the survey and some of these do not correlate with any magnetic anomaly.

PHASE 2

On December 4th, oil leakage was detected during the extreme low tide in the surf zone in the vicinity of the Becker wharf. On December 6th, the forty three magnetic anomalies were marked with buoys and two additional targets marked due to sheening apparent in the Marine Spill Response Corporation (MSRC) overflight. PENCO dove on the targets utilizing video and a hand-held magnetometer. An unusual increase in the oil seepage was noticed on December 11th which caused light sheening in the surf zone. The oil seepage is located approximately 1/3 mile offshore between the former wharfs and considered to be natural. The seepage is categorized as very light with one to two oil droplets per minute creating a light sheening on the ocean surface which eventually disperses or dissipates without impacting the beach. A Summerland area map showing the wharfs and piers and indicating the main seep locations and excavation sites is attached for reference (See Attachment #1). The general area of this activity mentioned above is known as the "Freckman" natural seep area (See map, site # 9). Another natural seep area is located between The Oxnard Oil Company and Southern Pacific Oil piers located east of "Treadwell 10" (See map, site # 8). As of December 13th, forty three targets were dove on and twelve of the sites were identified for possible excavation. After evaluation of the diving observations, it was jointly decided to excavate seven sites up to four feet to determine necessity of further action.

SUMMARY OF EXCAVATION OF SEVEN TARGETS (See attachment #1)

Site 1	Seep area between Treadwell and Moore wharfs
Site 2	Well "Treadwell 10"
Site 3	Tar cap 20'X 30' area between the Becker and Northstar wharfs
Site 4	First 24" sleeved well previously abandoned in the Northstar, S.B. Oil & Mining Co. wharfs area
Site 5	Second 24" sleeved well previously abandoned in the Northstar, S.B. Oil & Mining Co. wharfs area
Site 6	Offshore Becker wharf well
Site 7	Inshore Becker wharf well

A suspected area of natural seepage located 200 yards offshore between the Treadwell and Moore wharfs was confirmed (See map, site #1) and no magnetic anomalies were found. "Treadwell 10" shows very slight leakage around the outside six foot diameter steel sleeve with some gas leakage through the concrete plug (See map, site #2). The well is located in an area adjacent to suspected natural seepage. "Treadwell 10" was excavated further to a depth of seven feet and the subsurface sediment removed was found to be oiled throughout. No oil was found leaking from the well casing or the four foot plug wrapped in the steel sleeve attached immediately above. Sheening in this area is now believed to be caused by natural seepage using the plug or well casing as a conduit.

Greg Scott
March 16, 1995
Page 3

Another site excavated (See map, site #3) revealed a 20' X 30' tar cap with no magnetic anomalies recorded.

A more sensitive magnetometer was used and a magnetic anomaly was identified at the inshore Becker target (See map, site #7). At low, tide this area was excavated to a depth of seven feet and a steel casing measuring approximately 10" in diameter was found leaking approximately one pint every ten minutes (1/2 BBL per day). This work was completed on December 30th.

The offshore Becker target (See map, site #6) also believed to be an oil well and the tar cap area (See map, site #3) were not excavated further because at low, low tide the two sites were still underwater. The two 24" sleeved wells previously abandoned (See map, site #4, #5) currently are not leaking and will not be excavated at this time.

The temporary target buoys have been removed and the natural seep areas and other targets of concern are now marked with less obtrusive buoys. The geophysical survey charts and map have been finalized.

A strategy meeting was held on January 27th with the contractors, Coast Guard and State Lands Commission in attendance. The parties agreed the main area of concern was the Becker inshore site which was excavated to a depth of seven feet and found to be leaking up to 1/2 BBL/day from a casing approximately 10" in diameter. Three alternatives were discussed as follows. First, would be a take no further action scenario and monitor the area indefinitely. Secondly, a plan was discussed to take interim measures by excavating the Becker inshore site using a metal enclosure to keep seawater and sloughing beach sand out while exposing the casing. The casing would be cleaned out and a temporary plug installed. The area would be monitored to see if a significant improvement results. Alternative three would be to move in drilling equipment mounted on a floating barge system or sled system. A temporary pier system could also be constructed to house the drilling equipment. This alternative is very expensive and costs would exceed \$500,000. PENCO has submitted a preliminary proposal for alternative two (See attachment #2). The optimum low tides occur for one week periods in May, June and July.

The Coast Guard has decided to monitor the situation for now and make a final decision on pursuing alternative two in early May. I have also attached a copy of the Coast Guard update to the involved and interested parties (See Attachment #3). The total expenditures for the project to date are \$215,433 which includes \$195,470 for PENCO and \$19,963 for Coast Guard.

Attachments: (1) Summerland Map
 (2) PENCO Proposal
 (3) Coast Guard Update

cc: P. B. Mount II
 A. D. Willard
 D. Sanders
 R. Ludlow

Memorandum

TO : A. D. Willard *A*

Date : October 8, 1980

Via : C. F. Eaton ✓
L. C. Smith *Submitted 10/8*

File No. : W 3399
W 4284.3

From : D. S. Chase
STATE LANDS COMMISSION
100 Ocean Gate, Suite 300 - Long Beach, CA 90802

Telephone: ATSS
() -

Subject : Location of Offshore Oil Seeps, Summerland, California.

"Treadwell No. 10"

Located approximately 300' offshore in 9.5 feet of water in line with Valencia Road, Summerland, California. Oceanographic Services, Inc. describes it as a 3 foot high cement coated pipe. A similar pipe lies twelve feet to the east and a wood piling fourteen inches high lies six feet to the west. ("Survey of remnants of oil producing facilities on State coastal tidelands between El Capitan Beach State Park and Summerland, California - February - October 1979" by Oceanographic Services, Inc.) See location map and photos 1, 2, & 3.

Lambert Coordinates: North 338,046'; East 1,518,044'
From Oceanographic Services, Inc. Monument S3, R. 52° 48' 20", 468';
Monument S4, R. 317° 38' 20", 554'
Obstruction No. SB127

"Treadwell No. 17"

Located approximately 700' offshore in 23' of water in line with Valencia Road, Summerland, California. Oceanographic Services, Inc. describes it as a cassion ten inches in diameter, possibly a wellhead, an eight-inch diameter pipe located three feet shoreward of the cassion and a pipe eight inches in diameter by fifteen long located approximately eight feet to the west of the cassion. See location map & photos 1, 2, & 3

Lambert Coordinates: North 337,661'; East 1,517,950'
From Oceanographic Services, Inc. Monument S3, R. 71° 02' 48", 806';
Monument S4 R. 299° 35' 37", 876'.
Obstruction No. SB635, SB635a, SB635b

"Freckman Seep No. 1"

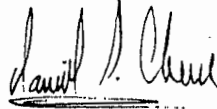
Located approximately 1440' offshore from a point midway between Southern California Edison's Ortega substation and the intersection of Via Real

A. D. Willard

-2-

October 8, 1980

and Greenwell Avenue. (Location is evident from air photos taken December 12, 1974, Photo index No. 29, Photos 1365 and 1367.) See location map and photos 4, 5, & 6.



D. S. CHASE
Energy and Mineral
Resources Engineer

DSC:sg

cc: D. J. Everitts
C. F. Eaton
L. C. Smith
D. S. Chase

Memorandum

To : D. J. Everitts, Chief
Energy & Mineral Resources Development

Date : April 8, 1981

via: A. D. Willard *✍*
C. F. Eaton

File No. : W 3399
W 4284.3

From : J. T. Freckman
STATE LANDS COMMISSION
100 OceanGate, Suite 300 - Long Beach, CA 90802

Telephone: ATSS
() -

Subject : Pete Brumis Contract: Oil Seep Location and Containment, Summerland Beach Area, Santa Barbara County

Operational Results: Three oil/gas seeps in the vicinity of Summerland, that were approximately located and marked by helicopter dropped bouys on December 17, 1980, were more specifically identified and described during diving operations conducted by Mr. Pete Brumis on December 18, 19, 1980. The so called "Freckman #1" seep, was identified by Brumis as a natural seep. The Treadwell #10 seep was determined to be a leak from an abandoned oil well that had been capped twice, previously; nothing further could be done using Mr. Brumis' equipment. Treadwell #17 seep was identified as a leaky abandoned oil well, which was successfully capped as part of the contract operations herein reported on. Attached as Exhibit "A" is the report and invoice of the contract diver, Mr. Pete Brumis, for this operation.

Background Information: The Hazardous Well Fund as administered by the Division of Oil and Gas provides moneys for the abandonment of oil/gas wells when information is unavailable or it is impossible to locate the last operator of an oil/gas well that is considered to be hazardous, a public nuisance, and/or a danger to natural resources.

Pursuant to a request for assistance from the Santa Barbara County Board of Supervisors, concerning an apparent oil leak at a previously abandoned well just off of Summerland Beach, the State Lands Commission requested funds from the DOG in order to investigate the problem area further. The DOG granted such funds and requested that the Commission supervise the operation.

Prior to contracting with a diver to investigate the area, three oil seeps were observed in the vicinity of Summerland during aerial surveys of the Santa Barbara Channel (W 4284.3). Using aerial photographs, maps, and past well histories, Dan S. Chase of the Commission staff, identified two of the seeps. These seeps, Treadwell #10 and Treadwell #17 were oil wells originally drilled from the old Southern Pacific Railroad Wharf prior to 1902. The wells were abandoned and the wharf is now gone. A more complete

April 8, 1981

history of these wells is provided in "Aerial Survey for Pollution Control-Ventura to Ellwood-May 22, 1980" in file W 4284.3, part 2. The third seep, called "Freckman #1", is some distance to the southeast of Treadwell #10 and #17 and is also described in the prior mentioned file.

Bouys were used to mark the location of what appeared to be the source point of each seep (see memo to D. J. Everitts dated February 25, 1981, W 4284.3). A diver, Mr. Pete Brumis, was contracted to investigate each seep and to cement or plug, if possible, the leaks.

Operational Detail: On December 18, 1980, I met with Pete Brumis and his associate Bob Benton at Brumis' boat, the "El Paula", which was docked in the Santa Barbara Harbor, Marina #3, Slip B-21. The following is a summary of the operations conducted:

December 18, 1980 - (Thursday)

0800 Departed Santa Barbara Harbor.

0900 On scene just off Summerland Beach where we located the Treadwell #10 seep. Pete Brumis made a tethered test drive (see photos No. 1 and No. 2) with oxygen hose and communication lines to the surface. The communication line was inoperative and therefore necessitated operation as a scuba or free diver. Visibility was reported to be about 6 feet. Brumis found a 10" casing rising out of the sand which looked somewhat like a shovel. No oil or gas was observed around the casing.

0957 An air-gun utilizing compressed air was used to blast sand from the 10" casing. Inside the 10" casing was cemented a pipe 6" in diameter which was crimped over at a 90° angle. Cement was also around the outside of the 10" casing. Upon removal of sand, Brumis thought he saw a small amount of oil rising to the surface, however, no oil was detected at the surface.

Brumis recommended that nothing be done at this location because cementing the whole casing would require a large cement mixer, extra sand lifting equipment, and a caisson or pipe that would fit over the existing casing and set as a form for the cement. No such equipment was available on board the "El Paula".

April 8, 1981

1016 Recovered diver and moved to the Treadwell #17 oil seep site. Brumis dove on Treadwell #17 and found an 8" casing rising about 10' above the bottom with oil and gas bubbles coming out of it. He then air-blasted down 30" into the sand filled casing opening. This liberated quite a bit of oil and gas which rose to the ocean surface. We rigged a 15' length of tremie pipe to a hopper (see photo No. 3) with a rubber hose connection. A plastic seal was fitted over the end of the tremie pipe that was to be submersed. The tremie pipe was stabbed into the 8" casing using the coordinated efforts of the diver and the boat crew (Bob Benton and myself). Colton Plastic Cement (see photo No. 4) was hand mixed in a wheelbarrow on deck and poured into the hopper, to flow through the tremie pipe and into the casing once Brumis cut the plastic seal.

Problems were encountered due to the motion of the boat, even though it was triple-anchored. The tremie pipe was bent and crimped which stopped the flow of cement. The operation around Treadwell 17 was aborted until repairs could be made.

1245 Departed for a survey of "Freckman #1" seep (see photo No. 5).

1300 Brumis dove on the "Freckman No. 1" seep. Oil blobs and gas bubbles were present. He found a number of small craters in the sand with oil and gas seeping slowly to the surface. All indications pointed to natural seep activity.

1330 Departed for Santa Barbara Harbor.

1430 Arrived at Berth B-21, Marine 3, Santa Barbara Harbor and commenced clean-up of equipment and repairs to the tremie pipe.

December 19, 1980 - (Friday)

0830-1200 Departed Santa Barbara Harbor and went directly to the Treadwell #17 seep. We rigged up the tremie pipe and hopper. Brumis dove on the casing with the air gun. He then cleared away the loose sediment and barnacles in the 8" casing using the air gun and a scraper. While checking the inside of the casing, he found that we had in fact gotten some

April 8, 1981

cement into it the previous day. The cement was hard and left only 15"-18" of the 8" diameter hole to fill.

Once again, we mixed the Colton Plastic Cement in the wheelbarrow on deck, by adding sea water (the previous day we had used fresh water). Pete Brumis, again in his scuba gear, directed the tremie pipe into the casing. The submersed end of the pipe was covered with plastic paper to prohibit water entry. Bob Benton and I poured cement into the hopper and subsequently into the tremie pipe. When the cement reached the submerged end, Brumis cut the plastic loose and allowed the cement to fill the casing. The cement overflowed the top of the casing and the tremie pipe was removed. The diver then wired a piece of heavy paper over the end of the casing where the cement was exposed. This was to prevent any surge action from disturbing the cement in the hole while it was setting. The tremie pipe and associated hopper were brought on board the "El Paula".

Before departing for the Treadwell #10 location, we observed the sea surface for 10-15 minutes and saw no oil at all. Prior to the cementing, oil blobs up to $\frac{1}{4}$ " in diameter had been rising to the surface and creating a small slick.

12:15

Arrived in the area of well Treadwell #10 and spotted oil and gas bubbles on the sea surface. Brumis immediately dove on the location, using the oil and gas, as a guide. He did not see the shovel shaped casing and pipe located the day before, but instead found a different casing. This new casing was encased in a 6' diameter plug of cement. He recognized it as a cement job that he and Ed Grizwold (Grizwold Construction Co.) completed in 1975. They had evidently placed a section of 6' diameter pipe over the then leaking casing and filled the pipe with cement to stop the leak. Brumis observed oil and gas bubbles rising from the seaward or South side of this concrete cylinder. Oil and gas was rising in a steady stream of bubbles at the rate of about 2/sec.

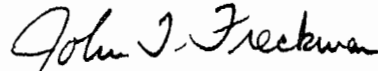
Mr. Brumis indicated that nothing could be done at that time (12/19/80) because of the lack of equipment on board. Action to curtail the leak would require another large section of steel (?)

April 8, 1981

pipe to be implaced around the existing cylinder. This would require a great deal of air blasting of the bottom to get the pipe to sink around th existing cylinder. Upon implacement, cement from a large cement mixer could then be pumped into the pipe, hopefully sealing the leak. Of course, this same type of operation had been completed by Grizwold and Brumis in 1975 with the result that oil and gas eventually reappeared. This well was also capped in 1968 during clean-up operations then. Perhaps corrosion of the well casing at some depth below the ocean floor is resulting in the present leakage?

14:30 Departed the Treadwell #10 area and returned to the Treadwell #17 area. Observed vicinity of Treadwell #17 for 15-20 minutes; no oil was observed.

15:00 Returned to Santa Barbara Harbor; cleaned and secured the "El Paula".



JOHN T. FRECKMAN
Energy and Mineral
Resources Engineer

cc: L. C. Smith
D. S. Chase
J. T. Freckman

b1oi
b1qc

Memorandum

To : D. J. Everitts

Date : December 19, 1986

File No. : W 4284.3

W 3399 Photos in W 4284.3
W 10408From : J. T. Freckman
STATE LANDS COMMISSION
245 West Broadway, Suite 425 - Long Beach, CA 90802Telephone: ATSS
() -

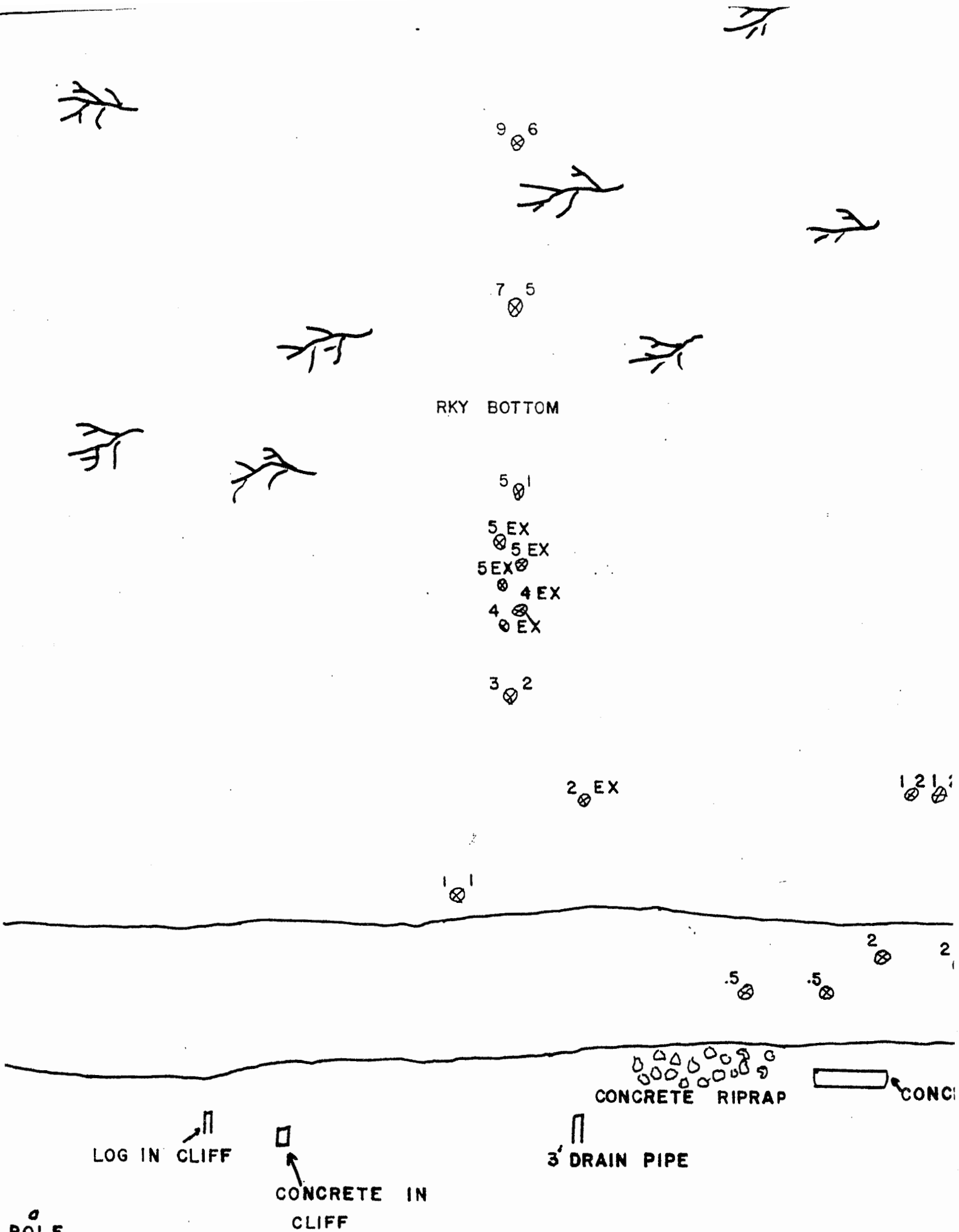
Subject : Aerial Survey, Long Beach to Gaviota, 10/22/86

On October 22, 1986 J. W. Planck and I conducted an aerial survey of the Santa Barbara Channel from Ventura to Gaviota photographing natural seeps, several leaky old abandoned wells and the construction activity at Chevron's Gaviota facility. On return to the Long Beach area we photographed the east end of Long Beach's public beach, near Alamitos Bay. This section of beach was replenished following the large storms of 1983 and the city was considering additional funding (at the time of the flight) for installation of artificial seaweed just offshore to insure continued beach stability.

We departed Long Beach airport at 0845 on 10/22/86 aboard National Helicopters Bell Jet Ranger (N111JG) and headed directly to the Santa Barbara Coast. At Rincon Island we noted that the island appeared to have been cleaned up (photo 1) considerably since our inspection of the island on April 1, 1986.

At Carpinteria there was oil in the water near Chevron's pier (photo 2), a source could not be identified, it is assumed to be natural seepage, there are several seeps near the shoreward end of the pier.

At Summerland Beach we saw three point sources of oil just offshore, these are leaky old abandoned wells, which we have seen in the past (photo 3, 4). One of the leaky wells is Treadwell #10, the other two are unidentified. A 1901 map by F. F. Flournoy, the Santa Barbara County Surveyor, shows a couple of unnamed piers in the area just offshore of Lookout (County) Park and between the seaward extension of Pierpont Street and Evans Avenue in Summerland. Several wells were drilled from those piers and it appears that two are leaking (photo 4). This area was previously photographed by us in January 1985 (and earlier). The well just off Lookout Park was leaking at that time too; compare photo 5 and 6 to 3 and 4. There have been no recent complains or observations of oil on the beach in this area.



Memorandum

State Lands Division
305 State Building
217 West First Street
Los Angeles, California 90012

Date : 11-22-68

File No.: W.O. 3399

Attention: Mr. A. D. Willard
Associate Mineral Resources Engineer

From : State Lands Division
Room 305 California State Building—217 West First Street, Los Angeles, California 90012

Subject: Summerland Beach Clearance Project
Progress report for 11-22-68

Payment provision:

2 Units

EXPENDITURES	
Total this date	Cumulative
\$1094. ⁰⁰	43844.75
	1094.00
	\$44,938.75

Work performed: 11-22-68 - Unit # 52 - 15' of 8" casing protruding from ocean floor - exposed at low tide. Cored off marine growth with Prisma-Lord shot. Cleaned out with air jet. Poured 6' of fill in top of casing and void on down. Pushed gunny sack down hole 22' and poured in 1½ sack cement plug. Placed 5# Triet shot in casing 17' down and shot off casing. Recovered 18' of 8" casing.

8-22-68 - Unit # 53 - 3' of casing exposed at low tide. Cleaned out down to 12' with air jet and cemented with 1½ sacks cement. Placed 5# Triet shot in casing and shot off casing. Recovered 5' of 8" - 6" + 4" casing.

Summary of priority sites

Permanent target No. 1 BECKER ONSHORE

This location was dredged on the beach during a low tide period, to a depth of approximately 6'. The subsurface sand here was heavily contaminated, as was the surrounding area. At a depth of approximately 7', the diver came into contact with a steel pipe estimated to be 10" in diameter. The top edge was not smooth, the pipe had broken or been cut away unevenly. Due to the heavy concentration of oil at this spot, it is believed to be the source of the contamination. A steel pipe was placed immediately west of this pipe for future reference.

Future excavation of this target would again require a large amount of digging.

Permanent target No. 2 BECKER INSHORE

(Buoy No. 1). This area was excavated to a depth of approximately 4' by the divers. Oil continued to be observed coming up through the sand, and area saturation was very localized. Once excavation here was complete, a further inspection with the U/W metal detector was completed, and still no contacts were reported, or within a radius of 15' of this area.

Permanent target No. 3 SPAR 'A'

(Buoy No. 9). This target is a 24" casing sticking up out of the bottom approximately 18". The diver recorded oil seepage coming from this area. Bottom sand appears to be contaminated around this contact.

Due to time/priority constraints, no further excavation was done at this location.

Permanent target No. 4 SPAR 'B'

(Buoy No. 13). A repair casing was discovered by the divers at this location. Divers also observed that beneath a shallow surface layer of sand, subsurface sand and material appeared to be contaminated. No oil was observed leaking at this location.

This target was further excavated using a hand jet, to an approximate depth of 4'. Visibility at this location was zero, the diver was relying on touch to identify and describe this contact.

The diver reported that the casing appeared to be steel approximately 24" in diameter, possibly two small sized drums welded/fastened one on top of the other.

Due to time/priority constraints, no further excavation took place at this location.

Permanent target No. 5 TREADWELL 10

This 72" casing was excavated to the point where the bottom of the casing was exposed 360 degrees. A 4' section at the southwest edge was also excavated deeper, to the point where the diver could fit his upper torso beneath the casing, so he could feel around. The diver felt even more concrete beneath the casing, though not as tapered as it originally is from the edge.

Initial surveys at this location recorded oil seepage clearly visible coming out of the natural bottom on the north edge, from 12" to 18" away from the casing. Gas bubbles were also recorded escaping up the seams of the casing, again at the north edge.

Subsurface material at these locations were contaminated, and oil seepage was still observed after further excavation at this location. It should be noted that no oil seepage was actually observed coming from within the casing itself.

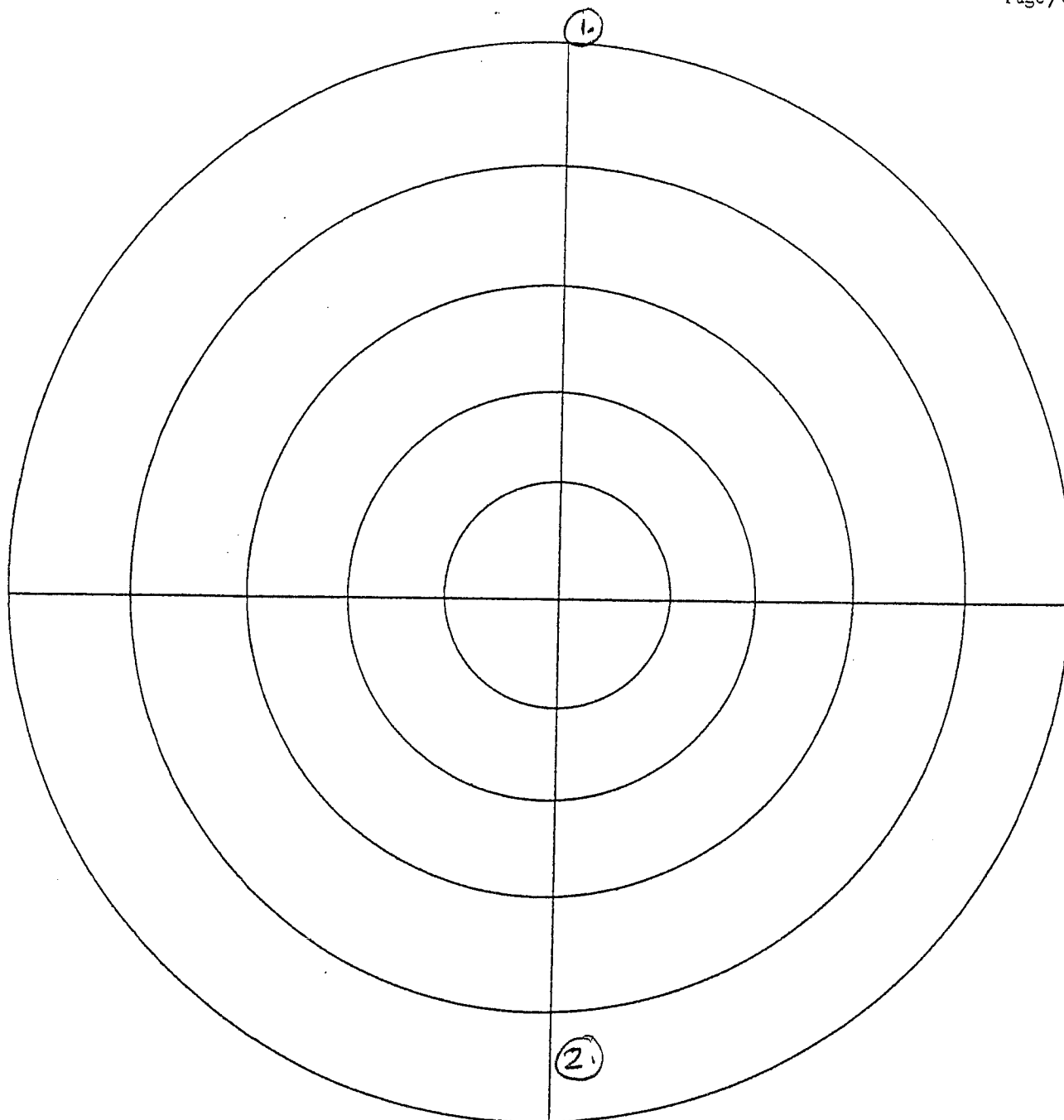
As most of the rock has been removed from around the edge, and due to the nature of the clay subsurface material, the divers anticipate that future removal of the sloughed -in sand should proceed rapidly.

- Permanent target No. 6** **FRECKMAN NATURAL SEEP**
(MSRC Over flight area). The initial survey of this location was conducted both visually, and with the U/W metal detector. To the north of this area was a large kelp bed. Through both inspections on the first occasion, no contacts were reported. Later on in the project, Sunday Dec 11., a lot of gas bubble activity was observed and recorded at this location. Again, visual and magnetic inspections were conducted, and again, apart from the obvious gas seepages, no other contacts were reported. Though merely speculation, the day before this phenomena occurred, earth tremor activity had been reported in the Playa Del Rey and Simi Valley areas.
- Permanent target No. 7** **NATURAL SEEP**
This is the natural seepage area located west of Treadwell 10. Contamination of the seafloor was observed at this location, and a further sweep with the U/W metal detector confirmed the presence of a target. Further excavation at this location was conducted, revealing a section of 2" pipe, the inside of which was heavily contaminated with oil. This came out in 2 pieces, and further inspection with the metal detector revealed no further contacts. The surrounding area of this area was visibly contaminated. Due to time/priority constraints, no further excavation was done at this location.
- Permanent target No. 8** **NATURAL SEEP**
(Spar 'E'). This is the natural seepage area located east of Treadwell 10. Oil seepage was observed topside by the crew at this location, appearing around the same period as the gas bubble activity at the Freckman area. This activity appeared to be cyclic, appearing on occasion. An U/W metal detector sweep was conducted at this location, and upon conclusion of this thorough inspection, no contacts were reported.
- Permanent target No. 9** **DUNCAN TAR CAP**
Buoy No. 6 is located here on a 'bulge' that closely resembles a speed bump, approximately 5' long by 1.5' wide. The entire Tar cap area stretches about 30' long and 20' wide. This area was inspected both visually and with the U/W metal detector. Some contacts were located, all scrap metal/pipe debris. The bottom condition at this location varies, from flat sand to hard packed clay and rock. The tar itself is so hard packed, it almost feels like an asphalt road.

Additional

Becker Offshore

Buoy No. 5 is located here. A hot spot had been detected at this area on a preliminary survey with the U/W metal detector. Oil saturation had been observed at this location, though no actual seepage was evident. Due to time/priority constraints, no further excavation was conducted at this location.



LOCATION TARGET No. 19

EASTING 6079249.62

NORTHING 1978422.49

DATE / TIME WEDNESDAY 7 DEC 94 1355

DEPTH 17'

* Each gridline represents a distance of 2 feet from the center.

* Mark all locations on target to coincide with recorded information:

1. Visual inspection by diver.
2. All items recorded by video.
3. Magnetic anomalies.
4. Casings- size, condition etc.
5. Bottom material.
6. Geological formations or changes.
7. Kelp locations & ID of holdfast attachments.
8. Discolored bottom by metallic corrosion or oil discharge.

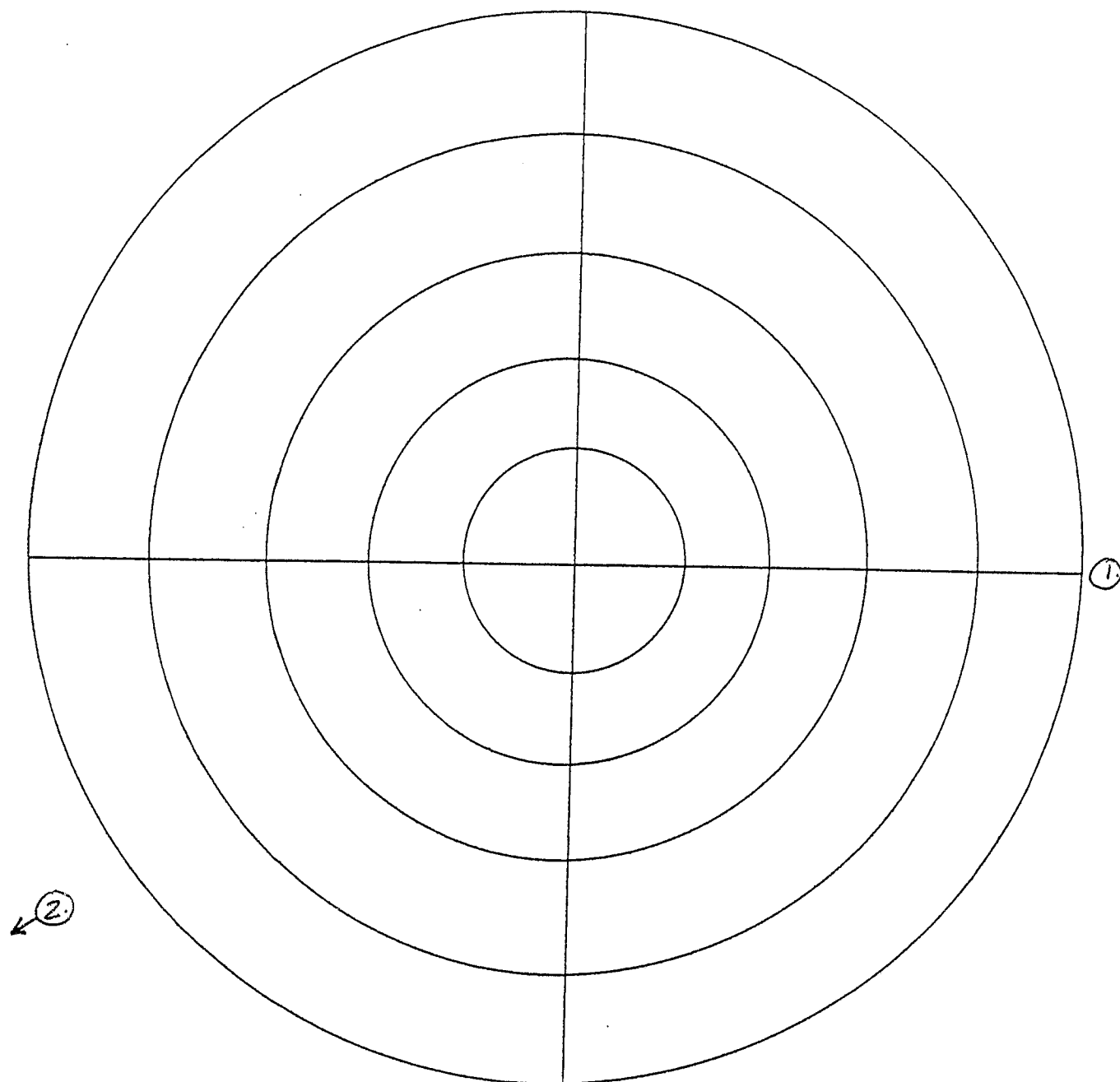
BOTTOM CONDITION AT THIS LOCATION IS HARD PACKED SAND WITH OCCASIONAL PATCHES OF ROCK AND KELP.

- ① 2 x 8" WOOD PILINGS APPROXIMATELY 10' LONG, BEFORE THEY DISAPPEAR INTO THE SEABED. (LAYING ON THEIR SIDES.)

AFTER A VISUAL SURVEY, DIVER COMPLETED A SECOND SEARCH WITH THE U/W METAL DETECTOR:

- ② 'HOT SPOT', APPROXIMATELY 2' x 4'.

DIVER DUG 6" DOWN TO ROCK, NO CONTACTS REPORTED. AS THE DIVER WAS DISCONNECTING THE U/W METAL DETECTOR, HE NOTICED THAT HIS HANDS WERE COVERED WITH OIL. DUE TO POOR VISIBILITY, THIS WAS NOT NOTICED AT TIME OF DIGGING. AFTER FURTHER EXCAVATION, IT APPEARS THE SEABED IS CONTAMINATED AT THIS LOCATION.



LOCATION TARGET No. 27 (TREADWELL)
10

EASTING 6079421.39

NORTHING 1978402.52

DATE / TIME WEDNESDAY 7 DEC 94 1005

DEPTH 17'

* Each gridline represents a distance of 2 feet from the center.

* Mark all locations on target to coincide with recorded information:

1. Visual inspection by diver.
2. All items recorded by video.
3. Magnetic anomalies.
4. Casings- size, condition etc.
5. Bottom material.
6. Geological formations or changes.
7. Kelp locations & ID of holdfast attachments.
8. Discolored bottom by metallic corrosion or oil discharge.

BOTTOM CONDITION HERE IS A MIXTURE OF SAND TO THE EAST, THE REST BEING ROCK WITH SCATTERED CLUMPS OF KELP AND GROWTH. BOTTOM CONTOUR VARIES, 1' TO 2' AT THIS LOCATION.

① STEEL PLATE BURIED IN THE SAND, WITH APPROXIMATELY 2"-3" OF EDGE SHOWING UP OUT OF THE SEABED.

② 20' TO THE SOUTHWEST IS A 72" DIAMETER STEEL CASING. IT IS FILLED WITH A CONCRETE PLUG. OIL SEEPAGE IS OBSERVED LEAKING THROUGH THE PLUG, AROUND THE NORTH EDGE AND UP TO A FOOT OR SO AWAY, COMING UP THROUGH ROCKS ON THE BOTTOM. GAS BUBBLES ALSO VISIBLE COMING UP THROUGH A SEAM OF THE CASING.

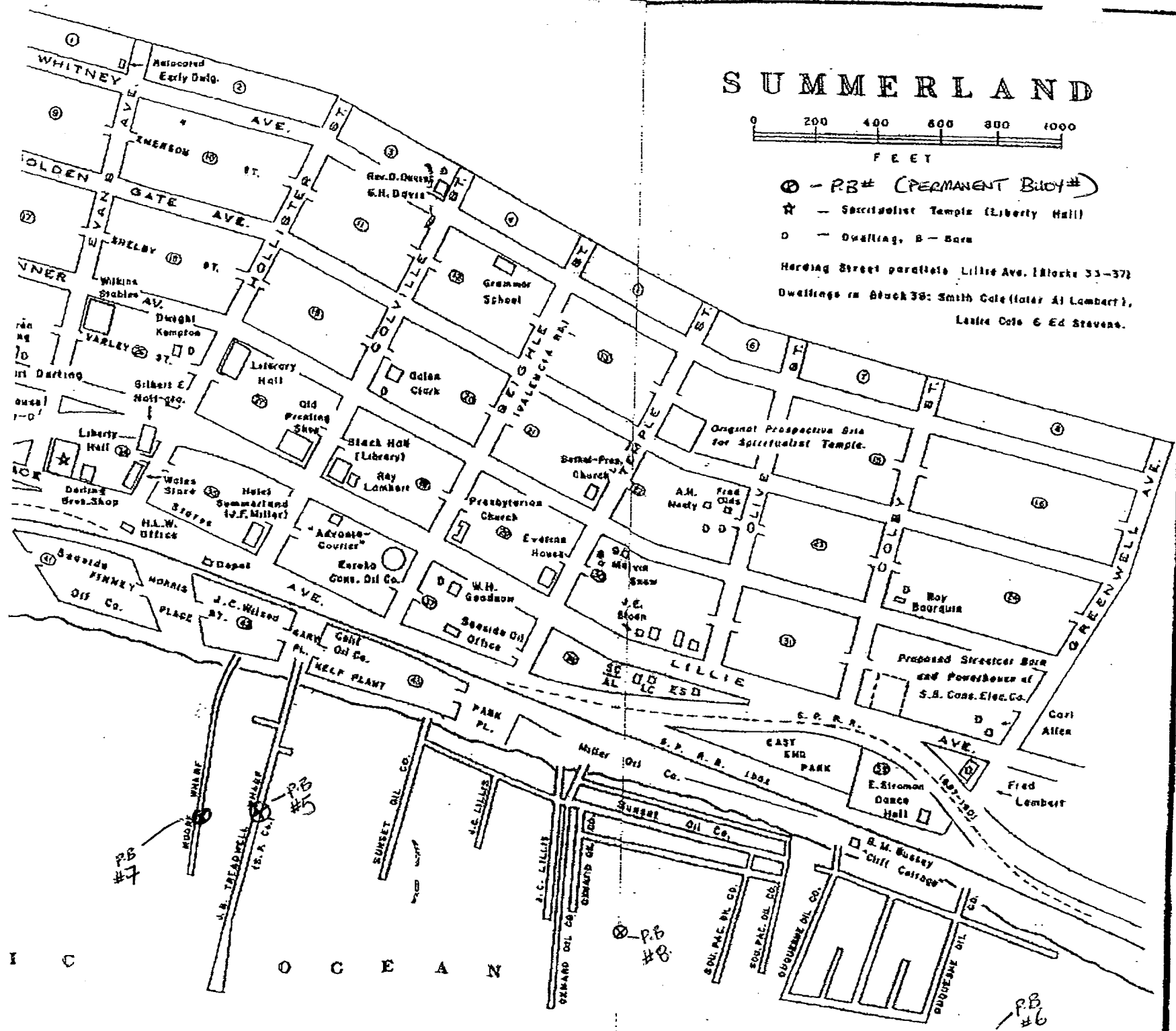
* SPAR BUOY 'C' NOW LOCATED AT THIS AREA.

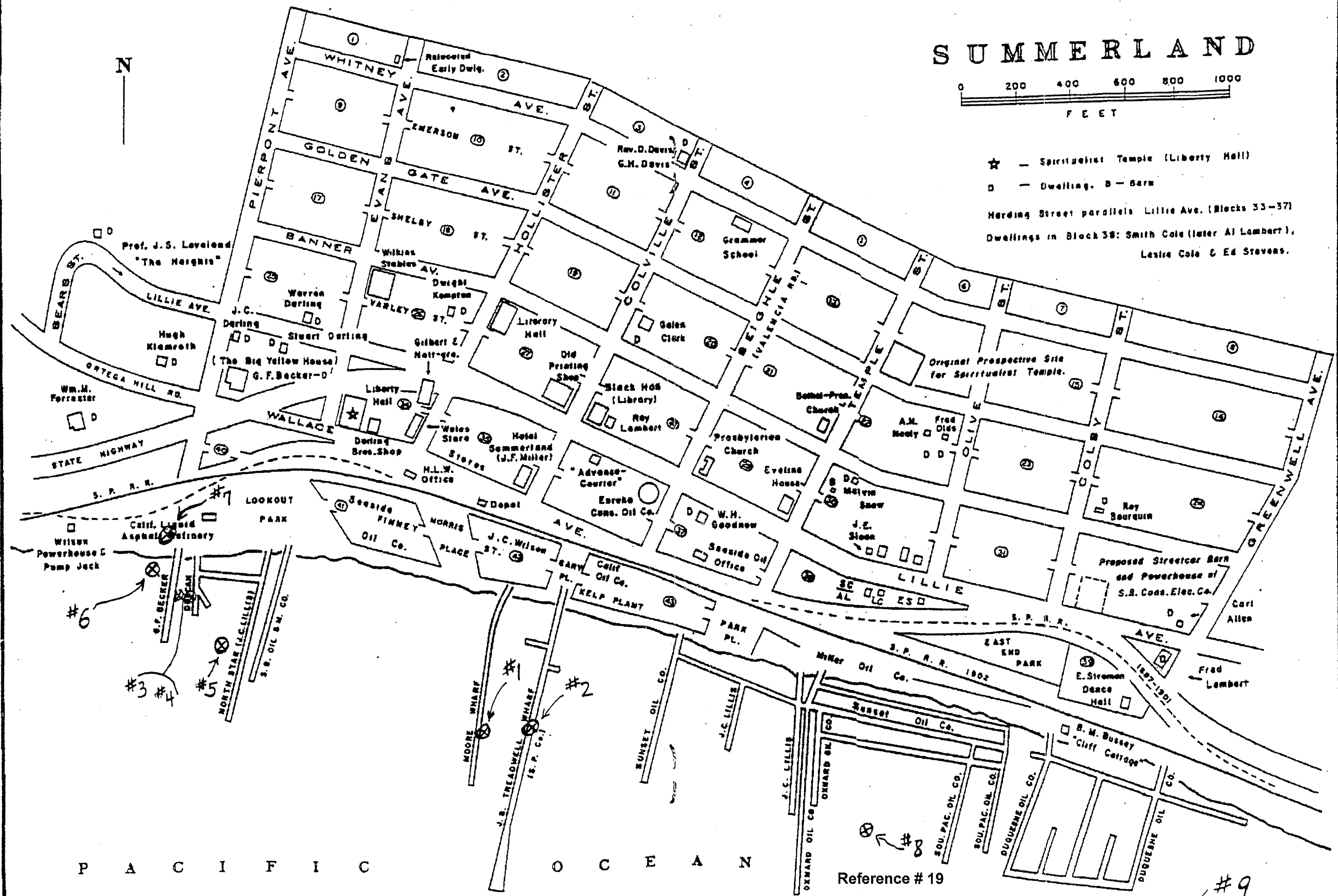
SUMMERLAND



- ⊙ - PB# (PERMANENT BUOY#)
- ☆ - Spiritualist Temple (Liberty Hall)
- D - Dwelling, B - Barn

Harding Street parallels Lillie Ave. (Blocks 33-37)
Dwellings on Block 38: Smith Cole (later Al Lambert),
Leslie Cole & Ed Stevens.







Summerland Well Research Project

Phase II-A Report

November 10, 2000





Summerland Well Research

Phase II-A Project Report

Introduction & Problem Description

Fairweather Pacific LLC has been retained by the Summerland Foundation (Reference 1) to investigate possible sources of oil seeps visible on the water surface offshore Summerland, California generally in the area between what was known as Treadwell Wharf and Moore Wharf.

Summary Of Previous Work

Phase I of this project, conducted between April 28 and June 20, 2000, included the review of archived data from California Division of Oil & Gas, California State Lands Commission and U.S. Coast Guard regarding well histories, geological information, surveys and cleanup efforts in the Summerland area of interest.

The results of Phase I concluded that data available supported the clients seep observations and the sites identified as Treadwell #10 and an area adjacent to the previous location of Moore Wharf as likely sources of the seeps (Reference 2).

At the conclusion of Phase I it was recommended that a diver survey be conducted at the aforementioned sites to confirm that previous agency observations and data and the clients observations correlate.

Documents Received from Client

The client provided the following documents to Fairweather Pacific LLC:

- "Exhibit Map" by Mark E. Reinhardt (undated); an aerial photograph showing locations of the present seep observations plotted with the historical locations of the Treadwell wells and Moore Wharf (Reference 3).

Phase II-A Work

On August 29, 2000 the dive boat "*Angela*" was mobilized from Santa Barbara Harbor with two divers, two divers tenders, air diving equipment and video recording equipment.

Upon arrival at the site, spots of oil sheen were visible on the surface and were forming as observations continued. There was an odor of crude oil present. These spots would spread rapidly as they reached the surface and then evaporate.



Summerland Well Research

Phase II-A Project Report



Examples Of Oil Sheen On Surface Upon Arrival At Site



Summerland Well Research

Phase II-A Project Report

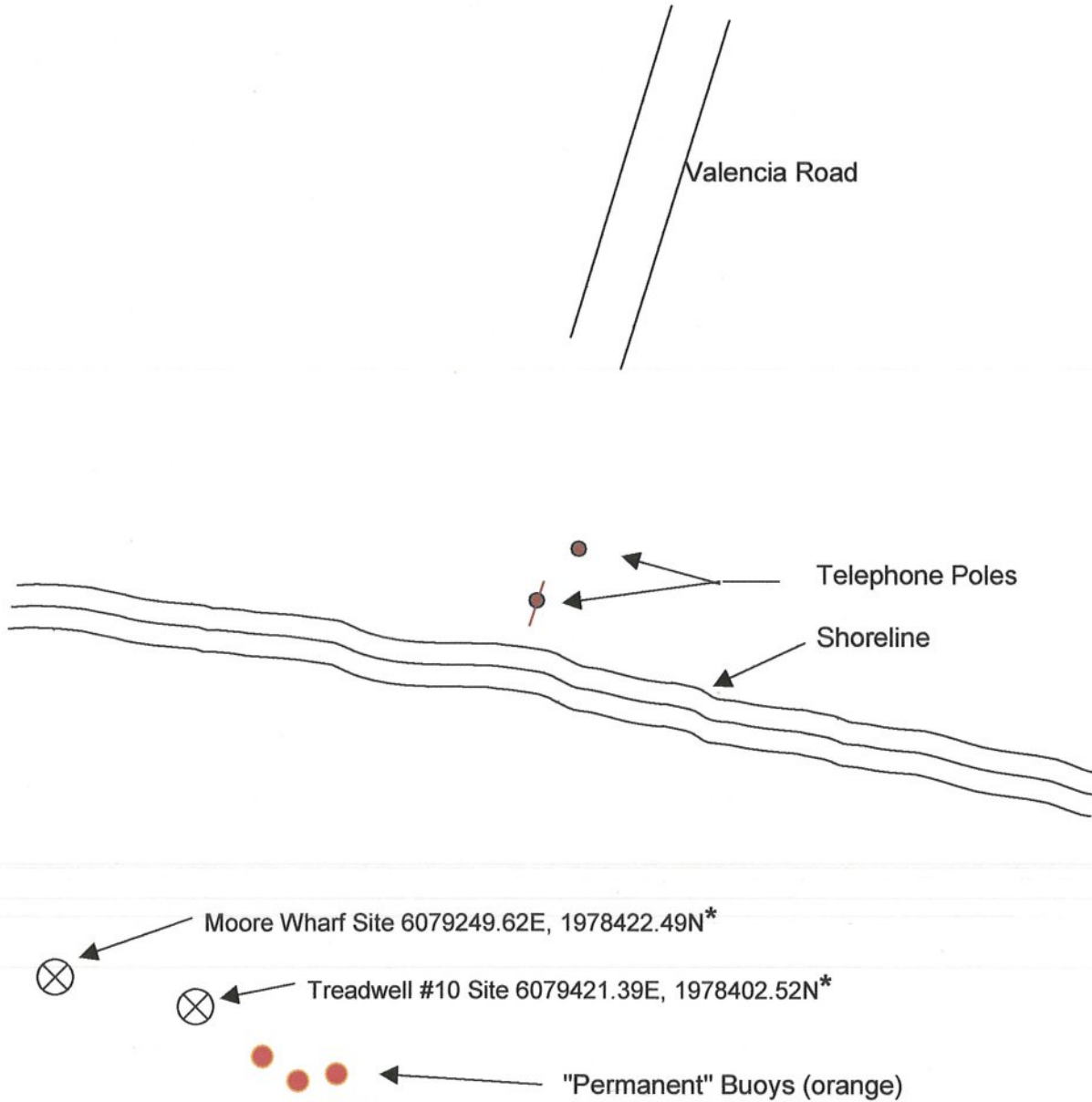


Illustration Of Site Vicinity And Location Of Dive Survey Sites (Not To Scale)
(* coordinates from PENCO/USCG Dive Survey of December 1994, NAD 83)

Summerland Well Research

Phase II-A Project Report

The weather on the day of the diver survey was overcast with very little wind and a slight swell. Water visibility appeared to be between 8 – 12 feet. Water depth (MLLW) at both locations was between 8 and 9 feet. A high tide of 4.9 feet was indicated for 11:00am on this day.

A survey crew was positioned on the bluff, above the beach, to direct site identification upon arrival. As the *Angela* traversed the area, a prism device on board allowed positioning of small marker buoys as directed by the survey crew. Two-way radios were used for communication between the *Angela* and the survey crew.

The diver survey operation consisted of one diver in the water, directed by two-way voice communication between the diver and the surface, and helmet-mounted video.



Diver Preparing For Survey – Note Video Camera & Light Assembly On Helmet

Summerland Well Research

Phase II-A Project Report



Video Monitor And Recording Equipment Aboard *Angela*

Summerland Well Research

Phase II-A Project Report



Diver-Held Prism Buoy At Treadwell #10 Location



Diver-Held Prism Buoy At Moore Wharf Location



Summerland Well Research

Phase II-A Project Report

Observations During The Diver Survey

Reference within this section is also made to Appendix A, herein, which contains the "Subsea Inspection Report" prepared by Marine Project Management (MPM). MPM was responsible for arranging the dive boat, dive crew and onshore survey team.

As previously mentioned, there was evidence of seep activity on the water surface and a petroleum odor of upon arrival in the area. As soon as the small marker buoys were placed, the diver "suited-up" and commenced inspection at the Treadwell #10 site. The 6-foot diameter concrete-filled form was immediately located and the diver began to work his way around the object searching for indications of the seep activity noticed on the water surface. The top of the form with respect to the seabed varies from nearly even with the seabed on one side to approximately 9 inches above the seabed on the other side.

By referring to the Diver Video Log in Appendix A, it can be seen that there are several entries, starting at 0916, through 0935 describing gas escaping from the upper surface of the concrete-steel form interface as well as oil in the sand outside the form in the North-Northwest quadrant. Also, on the second Treadwell dive, entries starting at 1224, through 1246 describe similar findings. Review of the sections of the videotape, corresponding to the entries in the Diver Video Log, confirms the diver observations and provides compelling evidence of the present situation at Treadwell #10. Included later in this report are "freeze frames" from the video that show the stream of escaping gas bubbles as well as oil seep formation. Additionally, an elevation-view sketch is provided that graphically illustrates the observations. Gas was escaping in nearly a constant stream of small bubbles, whereas the oil droplets could be seen forming slowly at the sand surface, then "break-free" to rise to the water surface. Although the diver reported some oil product released into the water when stirring the thin layer of sand on top of the concrete, there was no indication of active oil seepage on the concrete. This may be due to the viscosity of the oil whereby seepage rate through the path in the concrete is significantly decreased to preclude direct observation.

The Moore site yielded no observations of oil or gas rising into the water column. Further, as the distance from Treadwell #10 increased, the diver reported that oil in the sand decreased and even mentioned how clean the sand was on approach to the Moore site. Although the diver was able to locate what was described as an old well casing after jetting to a depth of approximately 18", there was no evidence of hydrocarbons in that area.

Review Of Geology

Summarizing what was reported in the Phase I document regarding the geology of this area; by referring to the geologic cross-section at the end of this document (Reference 4), it is clear that the source of the formation pressure of this area is from a water source (aquifer) located in the hillside some distance above and beyond the beach areas. As oil products were being extracted from the formation in Summerland's hey-day, the reservoir



Summerland Well Research

Phase II-A Project Report

pressure reduced, production dropped and water was observed mixed with the oil. Over the years, the remaining oil has migrated to the top of the formation and the aquifer continues to charge the reservoir. Seeps are observed in this area as a result of either natural conduit through the permeable layers or from improperly abandoned wells.

Source Of Seep Activity

The specific path of the seep activity at Treadwell #10 is open to a certain amount of conjecture at this time. This is because the concrete-filled form prevents access to the well casing beneath. Speculation leads to a number of possibilities, such as, (1) that oil and gas have been seeping passed a less than adequate cementing job performed in 1968, or, (2) that due to either corrosion or seismic activity the original well casing has been fractured or ruptured, or, (3) that a conduit for oil and gas has developed outside of the original well casing.

It must be assumed that at least in the short-term following the cementing work in 1968 there was no indication of seep activity at Treadwell #10. If this were not the case, presumably any seeps observed would be remedied while the contractor(s) were still available. It is possible that at this location the cement was of a poorer quality and that degradation over time has resulted in seep paths through the well casing cement. However, Treadwell #17 was the only other adjacent well with a chronic seep problem and that was apparently resolved in December 1980 (Reference 5).

Although possibility number (2) must be considered, since all the adjacent wells would experience the same amount of corrosion and seismic activity, if this were the case other nearby wells might exhibit a chronic seep/leak problem as well. Adjacent wells appear to be inactive in this regard.

Records are not available that would confirm the length and composition of the well casing(s). Therefore it is possible that over time, if the casings were not properly sealed into the formation, through natural capillary action, or accelerated by seismic activity, a microannulus along the outside of the well casing(s) could have formed. Regarding the likelihood of seismic activity influence, please note that the geologic cross-section (Reference 4) indicates a fault line transecting the Treadwell #10 well.

Considering the amount of oil product that was observed by the diver in the sand, both adjacent to, and away from, the cement-filled form, it may be appropriate to conclude that the third possibility is a credible scenario. It would seem unlikely that oil seeping directly from the top of the casing would produce such a concentration of oil in the sand, whereas, oil seeping along a conduit outside the casing may very well disperse into an expanding path as it approaches the seabed, thus accounting for the aforementioned diver observations.



Summerland Well Research

Phase II-A Project Report

Previous Treadwell #10 Abandonment Efforts & Seep Observations

The following table is presented to summarize the efforts conducted relating to the abandonment of the Treadwell #10 well and observations of the continued seep activity at that location.

Treadwell #10 Abandonment Efforts & Continuing Seep Activity

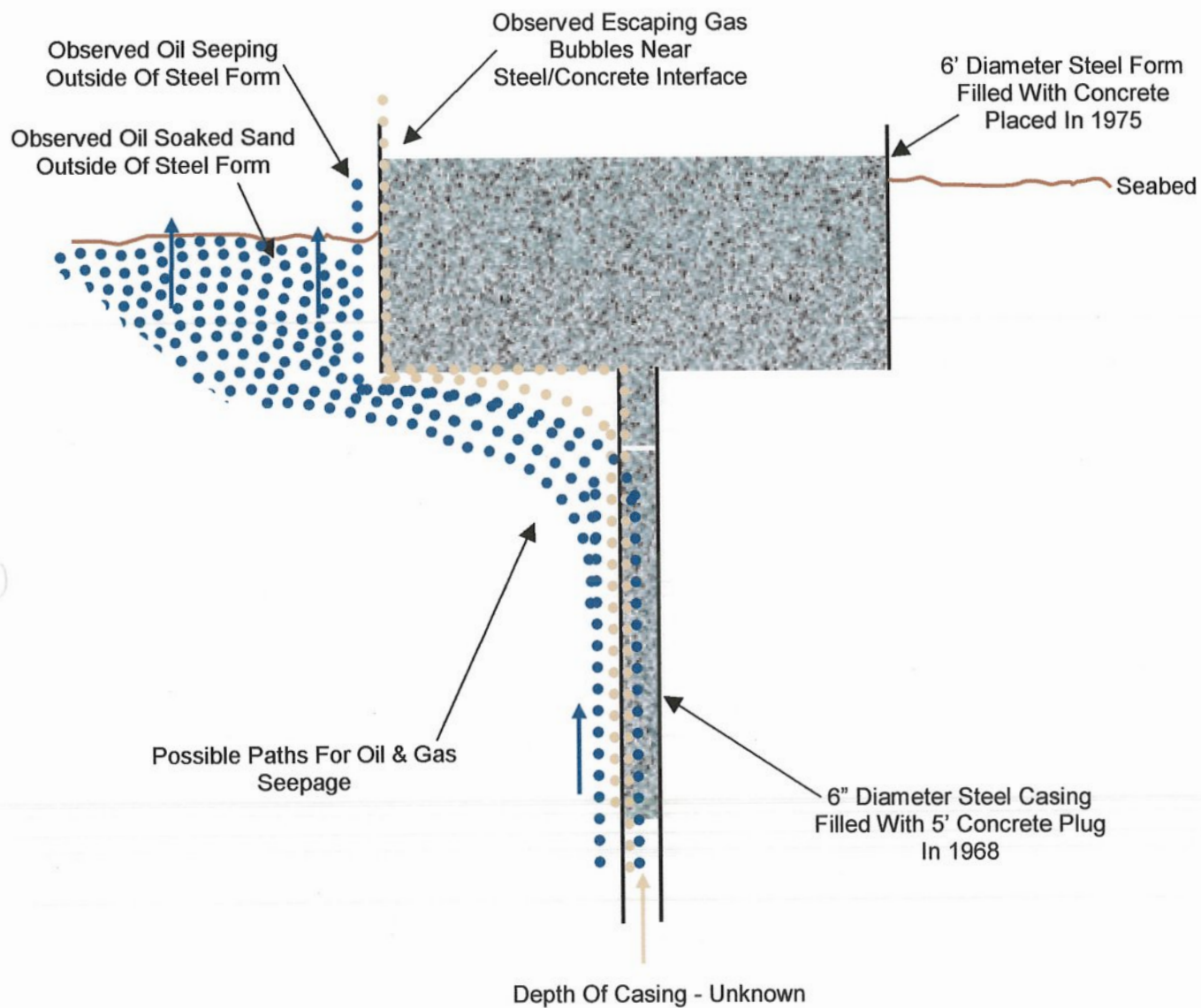
Date	Activity	Commentary
1906 est.	Treadwell Wharf abandoned	Severe storms damaged twelve of the Summerland wharves. No records exist that describe any subsequent specific abandonment efforts. There is documented description of rags, rocks, earth and wooden poles being used to abandon wells.
December 1968	Sixty (60) wells in the Summerland area are located, plugged with a short cement plug (5-foot long) and casings cut off with explosives as part of the Summerland Beach Cleanup Project.	The memorandums produced by the person in charge of these efforts (CalDive) describes the work performed on each well, however there is no specific identification as to which well is being worked on. There is good probability that Treadwell #10 was one of the wells plugged as mentioned in a CSLC memo of April 8, 1981.
1975	Treadwell #10 leaking, capped with a 6' diameter concrete-filled tub.	Information recounted by Pete Brumis in 1981 as work performed by him and Ed Griswold sometime in 1975 as follows. Working 28 days on site, jetting and air lifting material, jack-hammering a caisson made from two 55 gal. drums. Burned off a 3' section of pipe then placed the 6' tub and filled with 3 yards of concrete. The reference in Brumis' notes to the two 55 gal. drums indicates good correlation with methods used to plug wells in 1968 exercise, thus further confirming likelihood that Treadwell #10 was included among those cemented in 1968.
October 8, 1980	CSLC Memo	Describes active seep locations offshore Summerland
January 16, 1981	Memo to CSLC from Pete Brumis	Diver (Pete Brumis) observes oil and gas seeping at Treadwell #10 location
April 8, 1981	CSLC Memo	Oil and gas seep activity reported at Treadwell #10 location
December 19, 1986	CSLC Memo	Oil seep observed at Treadwell #10 in aerial flyover.
December 7, 1994	USCG, Oil Spill Liability Trust Fund Dive Survey	Oil and gas seep activity reported in Treadwell #10 location. Performed by PENCO.
August 29, 2000	Summerland Foundation Dive Survey	Oil and gas seep activity reported in Treadwell #10 location.

It is apparent that Treadwell #10 is a chronic source of seep activity in spite of two and possibly three (at the turn of the last century) previous abandonment efforts. These repeated attempts (1968 and 1975) at stopping the seep have been crude, resulting in less than acceptable results.



Summerland Well Research

Phase II-A Project Report



Elevation-View Section Illustrating Diver Observations And Possible Seep Paths

Summerland Well Research

Phase II-A Project Report



Observation Of Gas Bubbles Escaping Near Steel-Concrete Interface



Observation Of Oil Droplet Forming In Sand Outside Steel Form

Conclusions & Recommendations

From the findings reported herein it is confirmed that the Treadwell #10 site is still active with regard to oil and gas seep activity. Photographic (video) documentation supports this conclusion. However, the volume of released oil at Treadwell #10, as well as the lack of oil observed at the Moore location, with respect to the client's observations (Reference 3) may be the result of the time of the year that the dive survey was conducted. Referring to the geologic cross-section and the source of well pressure (water head) it may be reasonably concluded that in the later part of summer, following several dry months, groundwater levels are lower and consequently less pressure exists on the formation. Conversely, it is likely that seep volume may increase in the late winter and early spring months.

Following this dive survey, it can be confirmed that the seeps observed, and identified as, Treadwell #10 during the 1994-1995 survey and those observed by the client are at the same location and are still active. No similar confirmation could be made at this time regarding the Moore site.



Summerland Well Research

Phase II-A Project Report

Fairweather Pacific proposes that a discussion of the results presented herein be conducted between representative(s) of the Summerland Foundation and Fairweather Pacific LLC to chart a course of further investigation and action, as appropriate.

Suggested action items with regard to the seep activity would be:

1. Client to advise if increased seep activity is noticed following the winter rainy season. Conduct another dive survey to document any increased seep activity.
2. Present the findings of this report along with possible documentation of increased seep activity per No. 1 above to California State Lands Commission and petition CSLC for funding to bring equipment similar to that used during the well abandonment work of 1993 to Summerland for the purpose of lifting the cement-filled form, jetting the area underneath the form and inspecting for the source of the seep.
3. Develop plans for correcting any scenario of seep source prior to mobilizing for No. 2 above and be prepared to implement these plans on site as the seep source is identified.

Fairweather Pacific LLC is knowledgeable in permitting, petitioning, coordinating and discussing matters of this nature with agencies such as the California State Lands Commission and the Division of Oil & Gas and would look forward to participate on behalf of the Summerland Foundation in that capacity.

References

Please refer to the end of this document for copies of reference documents relevant to the discussion presented in the text and the conclusion(s) drawn therein.

1. Alan Grosbard letter to Fairweather Pacific LLC, 04-28-2000
2. PENCO – Summerland Oil Well Abandonment Project – Vol 3, Section 1, "Summary of Priority Sites," and Section 4, "Targets 19 & 27"
3. "Exhibit Map" by Mark E. Reinhardt, undated.
4. USGS Bulletin 321, Geology and Oil Resources of the Summerland District, 1907, Plate VII-B, Section Through Treadwell Wells.
5. Pete Brumis letter to CSLC, 01-16-1981



Summerland Well Research

Phase II-A Project Report

REFERENCES

ALAN Z. GROSBARD
ATTORNEY AT LAW
1888 CENTURY PARK EAST, SUITE 960
LOS ANGELES, CALIFORNIA 90067
TELEPHONE (310) 277-0505
TELECOPIER (310) 277-5700

April 28, 2000

Tom Kennedy
Fairweather Pacific LLC
4567 Telephone Road
Suite 203
Ventura, CA 93003
Facsimile: (805) 658-5605

Re: Summerland Well Research Project:

Dear Tom:

At this time, I am organizing on behalf of my client C. Anthony Thomas, a California non-profit corporation to be named the Summerland Foundation.

On completion of its formation, the Summerland Foundation will formally engage Fairweather Pacific LLC to research and recommend appropriate measures for abandonment of wells in the historic Summerland Oil Field identified as the Moore Wharf Wells, the Treadwell Wharf Wells, selected Sunset Oil Co. Wharf Wells, and selected on shore wells located North of the Treadwell and Moore Wharfs.

The specific focus will be to determine:

1. Whether these well sites are the cause of current oil seeps in the Summerland Oil Field, and
2. If so, what remedies are appropriate.

To accomplish these two (2) goals, we ask that Fairweather Pacific LLC perform the steps identified as Phase I of the Fairweather Pacific LLC proposal of April 7, 2000. On satisfactory completion of Phase I, we expect to promptly move forward on Phase II.

On behalf of the Summerland Foundation, I am authorized to approve commencement of Phase I at this time. C. Anthony Thomas personally guarantees payment to Fairweather Pacific LLC for all Phase I work.

ALAN Z. GROSBARD
ATTORNEY AT LAW

Tom Kennedy
Fairweather Pacific LLC
April 28, 2000
page two

I would appreciate periodic status reports as the work progresses. Thank you for your attention and assistance.

Very truly yours,

ALAN Z. GROSBARD

AZG/sp

cc: Karen Bobo
Anita De Thomas
Tony Thomas

Summary of priority sites

Permanent target No. 1 BECKER ONSHORE

This location was dredged on the beach during a low tide period, to a depth of approximately 6'. The subsurface sand here was heavily contaminated, as was the surrounding area. At a depth of approximately 7', the diver came into contact with a steel pipe estimated to be 10" in diameter. The top edge was not smooth, the pipe had broken or been cut away unevenly. Due to the heavy concentration of oil at this spot, it is believed to be the source of the contamination. A steel pipe was placed immediately west of this pipe for future reference.

Future excavation of this target would again require a large amount of digging.

Permanent target No. 2 BECKER INSHORE

(Buoy No. 1). This area was excavated to a depth of approximately 4' by the divers. Oil continued to be observed coming up through the sand, and area saturation was very localized. Once excavation here was complete, a further inspection with the U/W metal detector was completed, and still no contacts were reported, or within a radius of 15' of this area.

Permanent target No. 3 SPAR 'A'

(Buoy No. 9). This target is a 24" casing sticking up out of the bottom approximately 18". The diver recorded oil seepage coming from this area. Bottom sand appears to be contaminated around this contact.

Due to time/priority constraints, no further excavation was done at this location.

Permanent target No. 4 SPAR 'B'

(Buoy No. 13). A repair casing was discovered by the divers at this location. Divers also observed that beneath a shallow surface layer of sand, subsurface sand and material appeared to be contaminated. No oil was observed leaking at this location.

This target was further excavated using a hand jet, to an approximate depth of 4'. Visibility at this location was zero, the diver was relying on touch to identify and describe this contact.

The diver reported that the casing appeared to be steel approximately 24" in diameter, possibly two small sized drums welded/fastened one on top of the other.

Due to time/priority constraints, no further excavation took place at this location.

Permanent target No. 5 TREADWELL 10

This 72" casing was excavated to the point where the bottom of the casing was exposed 360 degrees. A 4' section at the southwest edge was also excavated deeper, to the point where the diver could fit his upper torso beneath the casing, so he could feel around. The diver felt even more concrete beneath the casing, though not as tapered as it originally is from the edge.

Initial surveys at this location recorded oil seepage clearly visible coming out of the natural bottom on the north edge, from 12" to 18" away from the casing. Gas bubbles were also recorded escaping up the seams of the casing, again at the north edge.

Subsurface material at these locations were contaminated, and oil seepage was still observed after further excavation at this location. It should be noted that no oil seepage was actually observed coming from within the casing itself.

As most of the rock has been removed from around the edge, and due to the nature of the clay subsurface material, the divers anticipate that future removal of the sloughed-in sand should proceed rapidly.



Permanent target No. 6 **FRECKMAN NATURAL SEEP**
(MSRC Over flight area). The initial survey of this location was conducted both visually, and with the U/W metal detector. To the north of this area was a large kelp bed. Through both inspections on the first occasion, no contacts were reported. Later on in the project, Sunday Dec 11., a lot of gas bubble activity was observed and recorded at this location. Again, visual and magnetic inspections were conducted, and again, apart from the obvious gas seepages, no other contacts were reported. Though merely speculation, the day before this phenomena occurred, earth tremor activity had been reported in the Playa Del Rey and Simi Valley areas.

Permanent target No. 7 **NATURAL SEEP**
This is the natural seepage area located west of Treadwell 10. Contamination of the seafloor was observed at this location, and a further sweep with the U/W metal detector confirmed the presence of a target. Further excavation at this location was conducted, revealing a section of 2" pipe, the inside of which was heavily contaminated with oil. This came out in 2 pieces, and further inspection with the metal detector revealed no further contacts. The surrounding area of this area was visibly contaminated. Due to time/priority constraints, no further excavation was done at this location.



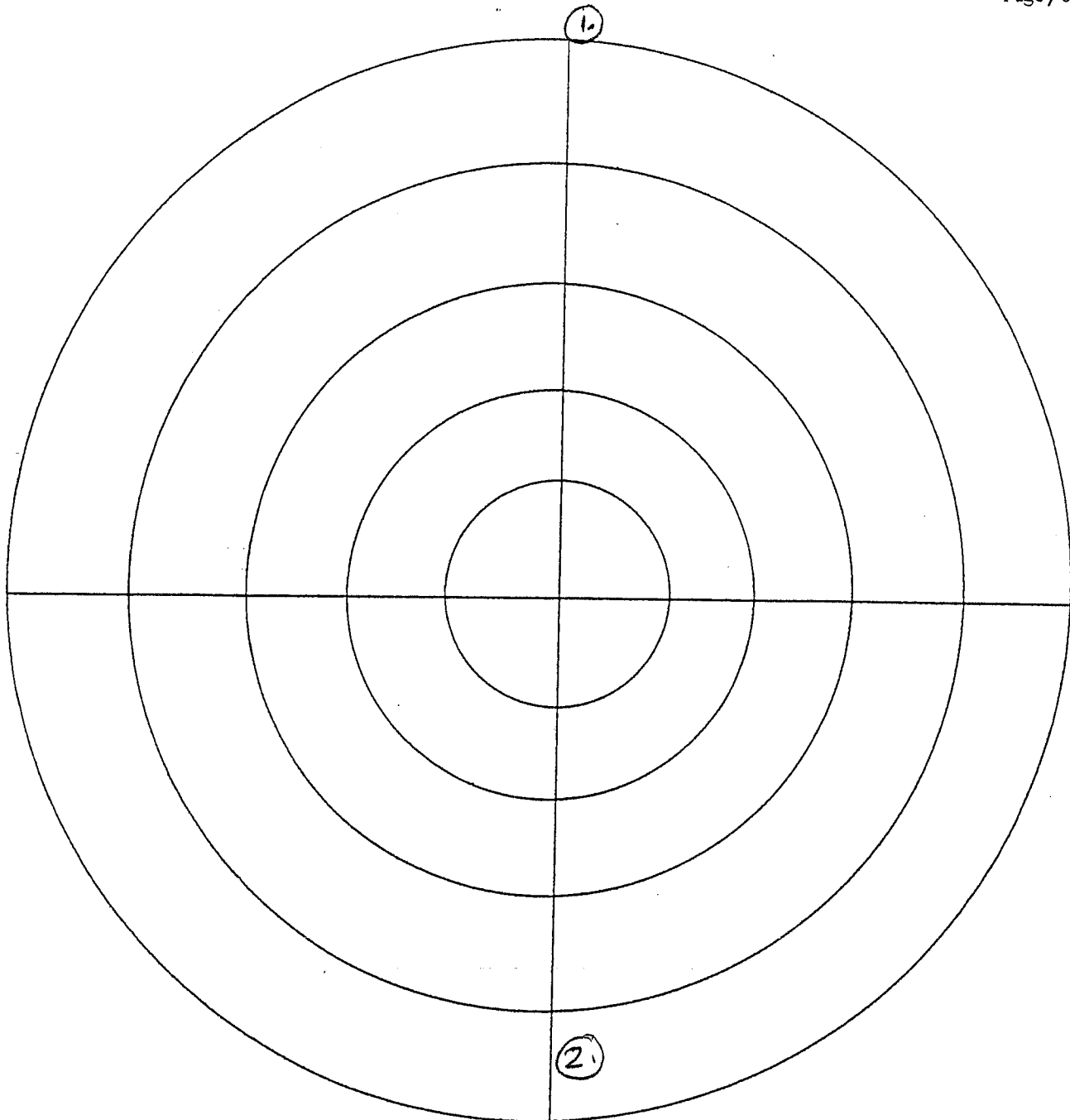
Permanent target No. 8 **NATURAL SEEP**
(Spar 'E'). This is the natural seepage area located east of Treadwell 10. Oil seepage was observed topside by the crew at this location, appearing around the same period as the gas bubble activity at the Freckman area. This activity appeared to be cyclic, appearing on occasion. An U/W metal detector sweep was conducted at this location, and upon conclusion of this thorough inspection, no contacts were reported.

Permanent target No. 9 **DUNCAN TAR CAP**
Buoy No. 6 is located here on a 'bulge' that closely resembles a speed bump, approximately 5' long by 1.5' wide. The entire Tar cap area stretches about 30' long and 20' wide. This area was inspected both visually and with the U/W metal detector. Some contacts were located, all scrap metal/pipe debris. The bottom condition at this location varies, from flat sand to hard packed clay and rock. The tar itself is so hard packed, it almost feels like an asphalt road.

Additional

Becker Offshore

Buoy No. 5 is located here. A hot spot had been detected at this area on a preliminary survey with the U/W metal detector. Oil saturation had been observed at this location, though no actual seepage was evident. Due to time/priority constraints, no further excavation was conducted at this location.



LOCATION TARGET No. 19

EASTING 6079249.62

NORTHING 1978422.49

DATE / TIME WEDNESDAY 7 DEC 94 1355

DEPTH 17'

* Each gridline represents a distance of 2 feet from the center.

* Mark all locations on target to coincide with recorded information:

1. Visual inspection by diver.
2. All items recorded by video.
3. Magnetic anomalies.
4. Casings- size, condition etc.
5. Bottom material.
6. Geological formations or changes.
7. Kelp locations & ID of holdfast attachments.
8. Discolored bottom by metallic corrosion or oil discharge.

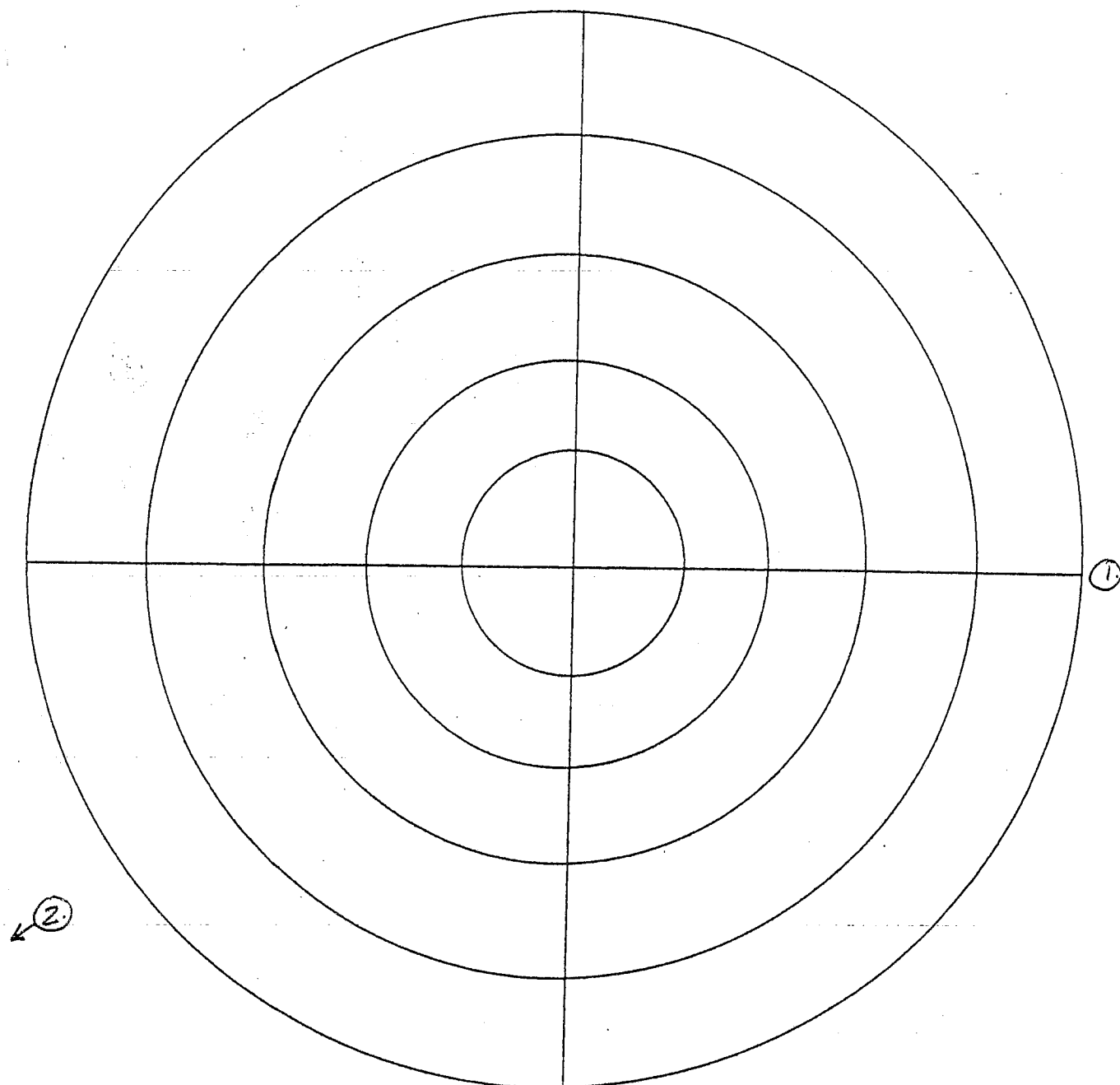
BOTTOM CONDITION AT THIS LOCATION IS HARD PACKED SAND WITH OCCASIONAL PATCHES OF ROCK AND KELP.

- ① 2 x 8" WOOD PILINGS APPROXIMATELY 10' LONG, BEFORE THEY DISAPPEAR INTO THE SEABED (LAYING ON THEIR SIDES.)

AFTER A VISUAL SURVEY, DIVER COMPLETED A SECOND SEARCH WITH THE U/W METAL DETECTOR:

- ② 'HOT SPOT', APPROXIMATELY 2'x4'.

DIVER DUG 6" DOWN TO ROCK, NO CONTACTS REPORTED. AS THE DIVER WAS DISCONNECTING THE U/W METAL DETECTOR, HE NOTICED THAT HIS HANDS WERE COVERED WITH OIL. DUE TO POOR VISIBILITY, THIS WAS NOT NOTICED AT TIME OF DIGGING. AFTER FURTHER EXCAVATION, IT APPEARS THE SEABED IS CONTAMINATED AT THIS LOCATION.



LOCATION TARGET No. 27 (TREADWELL)
10

EASTING 6079421.39

NORTHING 1978402.52

DATE / TIME WEDNESDAY 7 DEC 94 1005

DEPTH 17'

* Each gridline represents a distance of 2 feet from the center.

* Mark all locations on target to coincide with recorded information:

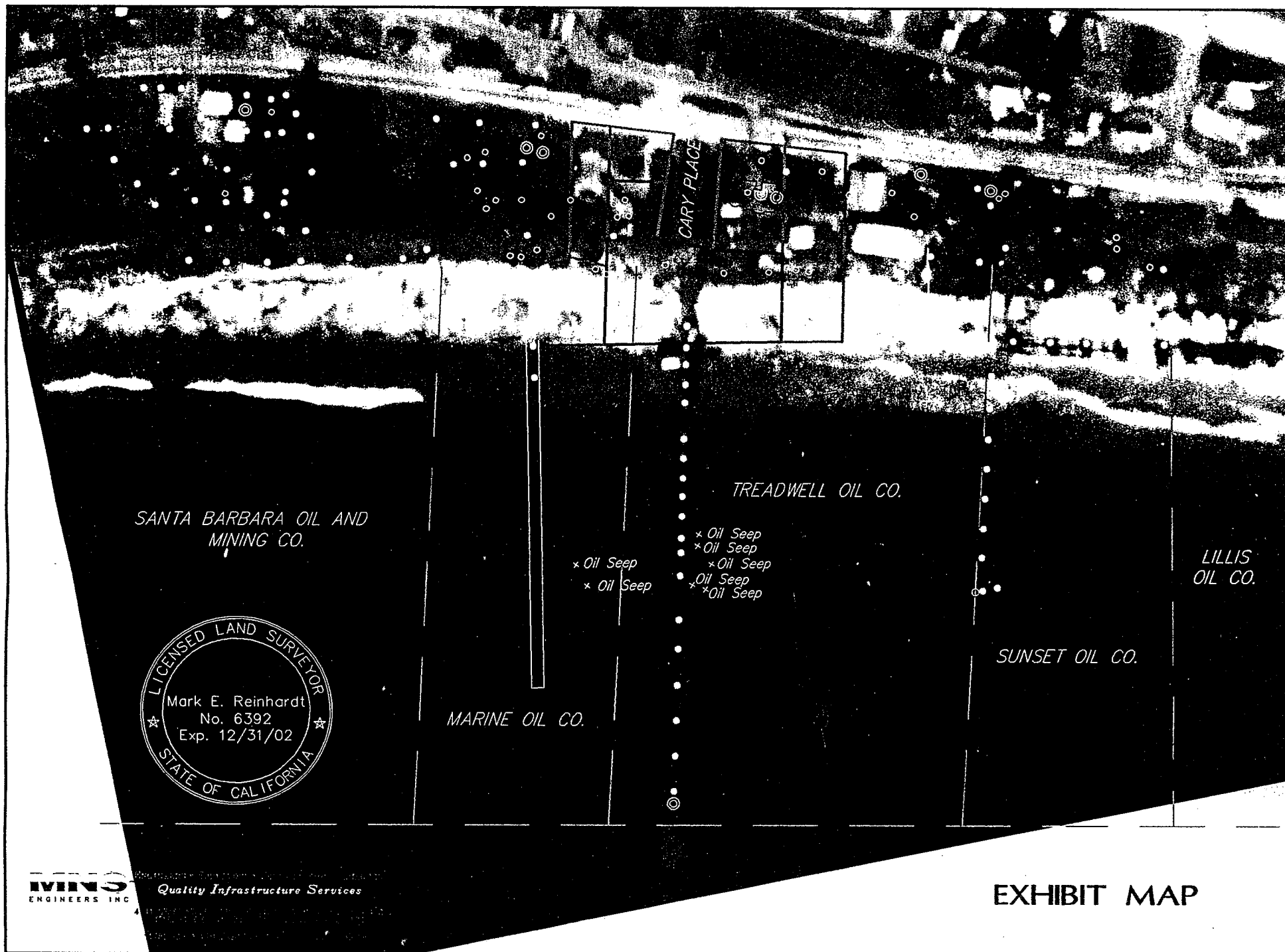
1. Visual inspection by diver.
2. All items recorded by video.
3. Magnetic anomalies.
4. Casings- size, condition etc.
5. Bottom material.
6. Geological formations or changes.
7. Kelp locations & ID of holdfast attachments.
8. Discolored bottom by metallic corrosion or oil discharge.

BOTTOM CONDITION HERE IS A MIXTURE OF SAND TO THE EAST, THE REST BEING ROCK WITH SCATTERED CLUMPS OF KELP AND GROWTH. BOTTOM CONTOUR VARIES, 1' TO 2' AT THIS LOCATION.

① STEEL PLATE BURIED IN THE SAND, WITH APPROXIMATELY 2"-3" OF EDGE SHOWING UP OUT OF THE SEABED.

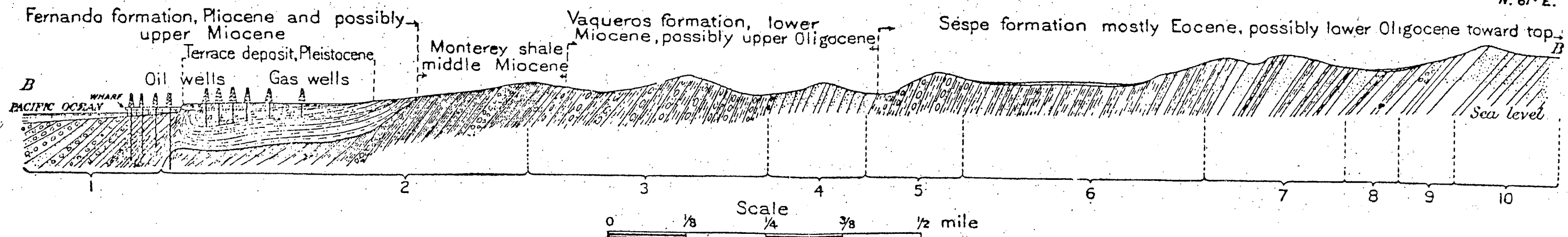
② 20' TO THE SOUTHWEST IS A 72" DIAMETER STEEL CASING. IT IS FILLED WITH A CONCRETE PLUG. OIL SEEPAGE IS OBSERVED LEAKING THROUGH THE PLUG, AROUND THE NORTH EDGE AND UP TO A FOOT OR SO AWAY, COMING UP THROUGH ROCKS ON THE BOTTOM. GAS BUBBLES ALSO VISIBLE COMING UP THROUGH A SEAM OF THE CASING.

* SPAR BUOY 'C' NOW LOCATED AT THIS AREA.



S. 61° W.

N. 61° E.

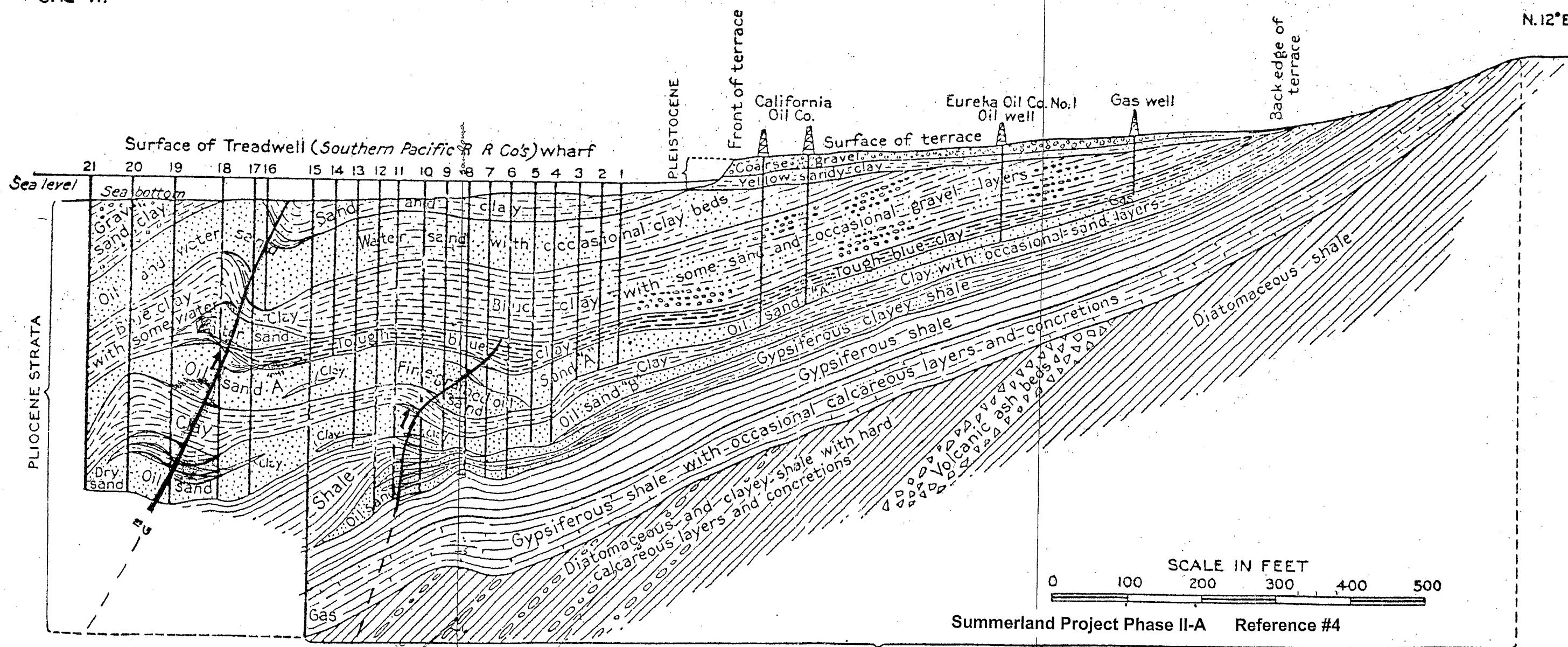


1. GEOLOGIC SECTION ON LINE B-B' OF PLATE 1.

From a point northwest of Summerland N. 61° E. to knoll in forks of Toro Canyon, 2 miles northeast of Summerland.

S. 12° W.

N. 12° E.



B. SECTION THROUGH TREADWELL (SOUTHERN PACIFIC COMPANY'S) WELLS.

N. 12° E. to a point immediately northwest of big oil tank in Summerland. Section is about 1,000 feet west of Oxnard wharf. (See Pl. VIII, Section C.)

January 16, 1981

Re: CONTRACT # 8067 on 12/5/80

116 # W-3399 and W-4284.3 SUMMERLAND CALIF.
LOCATE OFFSHORE OIL SEEPS AND ATTEMPT TO CONTAIN SEEPAGE.

Dec. 18, 1980 Inspected the oil seep area Treadwell #10 found what appeared to be a well casing. After air jetting 12 to 14 inches, which uncovered a section of 6" casing bent 90 degree horizontally 15 to 18" long coming out of a 10" casing, which had been previously cemented. The visibility was poor with a surge situation and was unable to see any oil seepage from that casing.

We moved on to Treadwell #17 water depth 20 to 23 ft., well-casing approx. 10' off bottom. This well had a double casing 13 to 14" and ~~about 12"~~ swaged at the top to 10" at the same elevation with the inner 8". The debris was up to 5" in the casing. By the use of air jetting and hand scraper it was cleaned down to 30 inches and at the top of a previous cement plug. We made up our cement tremie equipment and made 2 attempts to make a cement plug, but the surge situation hampered the operation and bent our 3" tremie pipe.

Freckman seep #1 is in about 30 feet of water, seepage appears to be coming from the formation in about a 15 foot radius with several 1 inch dia. size craters, seepage was an occasional oil and gas bubble mix. It may be possible that a well-casing is in that area a few feet or inches below the sand that might be exposed with the air lift method.

Dec. 19, 1980 The well-casing was cleaned out again with scraper and air jetting down to 15" of yesterday's cement plug that was set. Ocean conditions were more favorable today and our tremie cement job was good and covered top of casing with a cement bag and wired it to prevent any surging from washing out any cement. Observed underwater for 15 minutes and found no sign of oil or gas seepage from that well casing or at the base in that area.

Treadwell #10 area was clear today no surging and was able to track oil seepage. Oil and gas seepage coming from outside of caisson offshore side. That caisson was set by Ed Griswold, it was 6 ft. diameter by 5 ft. that well-casing ID in 1975 was well # 4. Griswold worked approx. 28 days on that site, air lifting sand and material, jack-hammer and dismantled caisson made by welding two 55 gal. drums together over the casing and cemented it. (probably by Cal Dive) Griswold burned off the top 3 ft. section of the casing. Using the DUK we set and sank the 6 ft. dia. caisson, centered it over well-casing using air lift and water jet so the top of caisson was level with the natural sand bottom. Cement was pumped from shore, used 3 yards of grout with 15' sand. We were confident and optimistic that this method would contain the oil seepage.

For the period of December 18, 19, 1980 for \$ 900.00 per day.

(CONTRACT #8067) TOTAL AMOUNT DUE PETE BRUMIS-----\$1,800.00

4008 Foothill Rd.

Santa Barbara, Ca. 93110



Summerland Well Research

Phase II-A Project Report

APPENDIX A

“Summerland Wells – Subsea Inspection Report”

prepared by:

Marine Project Management “MPM”



MARINE PROJECT MANAGEMENT, INC.
PROJECTS DESIGNED WITH EXPERIENCE

October 19, 2000

Mr. John Lorentz
Fairweather California
4567 Telephone Rd., Suite 203
Ventura, CA 93003

SUBJECT: SUMMERLAND WELLS – SUBSEA INSPECTION REPORT

Dear Mr. Lorentz:

Marine Project Management, Inc. (MPM) completed the above referenced inspection on August 29, 2000 in accordance to the Phase II-(A) Scope of Work. MPM utilized Underwater Technology Services, Inc. for performance of the diving operations, and Meager and Associates for survey tasks.

Our report is organized as follows:

Section 1.0	Scope of Work
Section 2.0	Summary of Findings
Section 3.0	Conclusions
Section 4.0	Video Logs
Attachments	Video Tapes 1 & 2 (original and one copy of each)

We trust that this information meets your requirements. Please contact me if you have questions or require additional information.

Best regards,

Steve Simpson
President



- 1.0 **SCOPE OF WORK** – The Summerland Subsea Well Inspection Scope of Work was completed in five phases as described below:
- 1.1 **Premobilization** – Premobilization tasks were completed prior to loading the support vessel and are outlined as follows:
- Subcontracted diving and surveying services
 - Converted coordinates and set DGPS onshore survey control
 - Filed United States Coast Guard Notice to Mariners
 - Held pre-project coordination meeting with diving personnel
 - Monitored seawater visibility condition at site to ensure adequate visibility for survey/video
- 1.2 **Mobilization** – The mobilization phase included organizing, loading, seafastening, and testing of project equipment as follows:
- 1.2.1 Equipment:
- (1) Diving support vessel
 - (1) Shallow air diving equipment spread
 - (1) Underwater color video system
 - (1) Underwater metal detector
 - (1) Air jet probe
 - (1) Survey prism buoy
 - (1) EDM Survey Total Station
- 1.3 **Inspection Operations** – Once mobilized, the diving support vessel transited to the project site with a 6-man inspection team consisting of (1) Fairweather Project Supervisor, (1) MPM Project Manager, (1) Diver/Supervisor, (1) Diver, and (2) Tenders. Project positioning was performed by (1) Land Surveyor from control points pre-established at Lookout Park. Onsite inspection operations included completion of tasks as follows:
- 1.3.1 Set Marker Buoys – Upon arrival of the diving support vessel at Summerland, the onshore surveyor positioned the vessel at the Moore and Treadwell #10 sites. Positioning was accomplished utilizing an onshore electronic distance measuring system "total station" and an offshore prism array. A marker buoy was set on each location by the vessel team as directed by the onshore surveyor.
- 1.3.2 Anchor Support Vessel – Once the marker buoys were set, vessel personnel observed current conditions relative to the Treadwell #10 marker buoy and moored the vessel. The vessel was positioned adjacent to the buoy so that diver transit to and from the site during the inspection would be minimized. One mooring location was utilized for all inspection operations due to favorable weather conditions and the relative close proximity of the sites.



- 1.3.3 Locate Treadwell #10 – Once the vessel engines were tagged and locked out, a diver was deployed at the marker buoy to locate the well. The diver was equipped with an underwater color video system and search line.
- 1.3.4 Conduct Inspection – Upon locating each well, a visual inspection was conducted to determine the physical and mechanical conditions of the well area at mudline.
- 1.3.5 Recover Markers and Transit – Upon completion of the inspection, the marker buoys and onshore control points were recovered. The onshore and offshore teams then transited from the Summerland site for final demobilization.
- 1.4 **Demobilization** - Personnel and equipment were demobilized from the Summerland site to their respective subcontractor's facilities.
- 1.5 **Inspection Reporting** – Development of the inspection report included a review of all field data, copying inspection video tapes, and the developing this document.



- 2.0 **SUMMARY OF FINDINGS** – Inspection operations were video taped to document findings and are detailed by time and tape on the video logs included in Section 4.0 of this report.
- 2.1 **Treadwell #10** – The inspection found a 6-foot diameter steel form containing concrete seabed as depicted in previous documentation. The cap was found to be in good to fair condition with some minor cracks and separation at the cap/form interface. Both oil and gas were escaping into the water column at the site as described below.
 - 2.1.1 **Hydrocarbon Observations** - Hydrocarbons were observed coming from the seabed, cap and form at the Treadwell #10 site as follows:
 - 2.1.1.1 **Gas Release** - Gas bubbles were predominately observed at the form/concrete cap interface in the northern section of the cap. Gas leakage was clearly recorded on the video tape(s) coming from inside of the form.
 - 2.1.1.2 **Oil Release** – Oil was predominately observed forming at the sandline outside of the form. Initially, small droplets were observed at the sand surface, and once the droplets were large enough to break surface tension the drops floated up into the water column. In addition, air probing of the seabed surrounding the form found oil throughout the area, but predominately on the north west side.
- 2.2 **Moore Wharf Location** – A vertical tubular was located within 5' of the well's reported coordinates. The tubular was found by air jetting adjacent to polypropylene lines which were observed at sandline. The lines were actually tied to the well casing, and are probably from a previous inspection.
 - 2.2.1 **Hydrocarbon Observations** - Hydrocarbons were not observed coming from the seabed, or casing at the Moore location. In addition, investigation of the area surrounding the Moore well below sandline with an air probe did not release any noticeable hydrocarbons.
- 2.3 **Other Locations** – Oil droplets were visible "rolling" on the seabed from Treadwell #10 on a heading of west-northwest from Treadwell #10. This condition was observed as much as 110-feet west-northwest of Treadwell #10.



- 3.0 **CONCLUSIONS** – In review of the onsite conditions MPM has made conclusions as follows:
 - 3.1 Treadwell #10 – Hydrocarbons are leaking from either the well bore or adjacent seabed, and the 6-foot diameter cap is not containing the leakage. Unfortunately the cap appears to only be providing a cover for the well bore rather than serving as a pressure boundary plug. Probable causes of gas/oil separation, i.e. gas escaping from inside of the cap form, and oil escaping from outside of the cap form are either:
 - 3.1.1 The bottom of the concrete cap could be concave providing an area for collection of high gas pocket/low oil. This condition would force the oil to migrate below the gas bubble to the perimeter of the form and beyond.
 - 3.1.2 Minimal separation between the form and concrete cap could allow gas to rise through the gap, and cause the heavier oil to migrate to the perimeter of the form and beyond
 - 3.2 Moore Location – Hydrocarbons were not present at the time of inspection. The lack of leakage could be due to either:
 - 3.2.1 Summer conditions providing low water drive pressure into the formation
 - 3.2.2 Previously reported leakage was actually escaping from another area
 - 3.3 Other Locations – The area from Treadwell #10, heading west-northwest was found to have oil droplets “rolling” along the seabed. None of the droplets were observed forming, and it is assumed that sand laden oil was escaping from Treadwell #10 and was moved northwest along the seabed due to a corresponding west-northwest bottom current condition.



4.0 VIDEO LOGS



DIVER VIDEO LOG

CUSTOMER:	Fairweather	DATE:	8-29-00	FACILITY:	Summerland Wells
CONTRACTOR:	UTS	JOB NO.	016	AFE NO.:	Verbal J. Lorenz
TIME:	TAPE #:	LOCATION & COMMENTS			

0915	1	Diver left surface to search for Treadwell #10 at preset buoy location.
0916	1	Located Treadwell #10, commenced overview video inspection at northwest casing seam with overview of gas leak. Leak is inside of concrete form at form/concrete interface adjacent to seam, and sand is covering concrete.
0919	1	Completed viewing of north edge of form,
0922	1	Inspect outside perimeter of form.
0928	1	Completed inspection of outside perimeter of form. Discovered oil migrating out of sand.
0929	1	Diver standing by while topside team repairs equipment
0931	1	Resumed inspection outside of form, 6-feet north of form. Diver disturbing sand to 1-foot below sand line which liberates oil from sand. Diver continues disturbing sand 6-feet from form around full perimeter of form. Oil found in northwest quadrant only. Note that no gas is present.
0935	1	Commence inspection 3-feet outside of form, 3-feet north of form. Diver disturbing sand to 1-foot below sand line which liberates oil from sand. Diver continues disturbing sand 6-feet from form around full perimeter of form. Oil found in northwest quadrant only. Note that no gas is present.
0939	1	Completed inspection of Treadwell #10, paused tape while diver transits to Moore Wharf location.
0950	1	Diver in route to Moore location, inspecting seabed in transit and notes that oil laded sand diminishes to zero while moving away from Treadwell #10
0953	1	Diver on location at preset Moore location buoy searching for evidence of well and or hydrocarbon leak(s).
0955	1	Diver unable to locate evidence well or hydrocarbons, onshore surveyor taking fix on diver held reflector buoy to confirm coordinates.
1008	1	Surveyor positioning diver 20-feet further offshore (preset buoy was off location)
1010		Diver on location (positioned by surveyor), searching for evidence of well.
1011	1	Diver locates old exposed polypropylene line in sand adjacent to survey coordinates and excavates by hand to investigate.
1018	1	Diver dug as far as practical by hand without locating casing, or hydrocarbons. Topside personnel deployed air probe to diver to allow further excavation.
1025	1	Diver commences excavation at poly line/Moore site with air probe.
1032	1	Diver excavates as deep as practical with air probe (approximately 18-inches). Diver determines by feel that old lines are tied to vertical tubular which is approximately 6" in diameter.
1033	1	Diver observes hole above tubular for evidence of hydrocarbons.
1040		No evidence of hydrocarbons were observed at this location. Diver describes top of tubular - tubular is severely corroded at top edge and crumbles in divers hand and is probably the subject Moore well based on location and findings.
		End of tape #1
1224	2	Resume survey at Treadwell #10, diver air probing outside of form. Oil is released into water column from sand in area of probing.
1227	2	Diver ceases probing and inspects inside of form at north edge. Diver observes oil forming at sandline which releases into water column apparently occurring once droplet is large enough to break surface tension with sand.



DIVER VIDEO LOG

CUSTOMER:	Fairweather	DATE:	8-29-00	FACILITY:	Summerland Wells
CONTRACTOR:	UTS	JOB NO.	016	AFE NO.:	Verbal J. Lorenz
TIME:	TAPE #:	LOCATION & COMMENTS			
1233	2	Diver resumes air probing outside of form at north seam. More oil being release into water column, with no evidence of gas outside of form.			
1240	2	Diver commences air-probing perimeter of form releasing hydrocarbons from sand adjacent to form.			
1243	2	Diver commences probing 6-feet outside of form starting north of form. Area of oil release is concentrated in northwest quadrant outside of form, and diminishes as distance increases from form.			
1246	2	Diver observing gas at north seam in form, inside and outside of form. Release inside of form is primarily gas, release outside of form is primarily oil.			
1255	2	Inspected south edge of form to determine if seam/flange was present as found on north side. South seam/flange is similar or identical to north side seam.			
1302	2	Diver inspects inside of form.			
1304	2	Complete Treadwell #10 Inspection. Setting up to inspect shoreward of Treadwell #10 to locate additional Treadwell well casings			
1310	2	Diver commences survey shoreward of Treadwell 10 with metal detector – no well casings located in first transect to/from –6 FSW.			
1320	2	Diver commences second transect from vessel shoreward.			
1321	2	Diver locates shot off casing approximately 45-feet shoreward of Treadwell #10. No evidence of hydrocarbons noted at or around casing.			
1323	2	Diver continues shoreward – no additional conductors were located during balance of survey.			
1336	2	Completed survey - no additional conductors were located during balance of survey. End of tape 2, end of survey.			











